

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND
SOUTHERN DIVISION

UNITED STATES OF AMERICA : Criminal Action No.

v. : PWG 18-0525

CHRISTOPHER A. SMITH, : Greenbelt, Maryland

Defendant. : Tuesday, November 26, 2019

/ 1:09 P.M.

TRANSCRIPT OF MOTION PROCEEDINGS
BEFORE THE HONORABLE PAUL W. GRIMM
UNITED STATES DISTRICT JUDGE

APPEARANCES:

FOR THE GOVERNMENT: HOLLIS RAPHAEL WEISMAN, Esquire
DWIGHT JOHN DRAUGHON, JR., Esquire
Office of the US Attorney
6500 Cherrywood Lane Suite 200
Greenbelt, Maryland 20770
301-344-4029

FOR THE DEFENDANT: DOUGLAS RYAN MILLER, Esquire
Office of the Federal Public Defender
6411 Ivy Lane, Suite 710
Greenbelt, Maryland 20770
301-344-0600

OFFICIAL COURT REPORTER: LINDA C. MARSHALL, (301) 344-3229

COMPUTER-AIDED TRANSCRIPTION OF STENOTYPE NOTES

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

I-N-D-E-X

WITNESSES

On behalf of the Government:

Direct Cross Redirect Recross

Matthew Manning

(By Mr. Miller)

10

(By Mr. Draughon)

56

(By Mr. Miller)

84

On behalf of the Defendant:

Wendell Cover

(By Mr. Miller)

92

(By Ms. Weisman)

128

(By Mr. Miller)

142

1 P-R-O-C-E-E-D-I-N-G-S

2 MS. WEISMAN: This is the case of United States versus
3 Christopher Andrew Smith, Case Number PWG 18-CR-525. We're here
4 for motions hearings, Your Honor.

5 Hollis Weisman and Dwight Draughon representing the
6 government.

7 THE COURT: Thank you very much.

8 On behalf of the defendant.

9 MR. MILLER: Good afternoon, Your Honor. Doug Miller,
10 Assistant Federal Public Defender on behalf of Mr. Smith.

11 I'm joined at counsel table by our defense
12 investigator, Kimberly Whaley, and I'd ask permission for her to
13 help me with the exhibits and such.

14 THE COURT: No problem.

15 MR. MILLER: Thank you.

16 I'd also note the presence of our expert witness,
17 Wendell Cover. And I will be asking if the Court will suspend
18 the usual rule on witnesses for this hearing so that he may --

19 THE COURT: Yeah, yeah, yeah. Having experts present
20 is important to make sure that we have --

21 This is a case that's designed to help me make advance
22 rulings on the admissibility of the proposed expert testimony
23 that has been provided by both sides under their disclosure
24 obligations. And each of the reports have been provided to the
25 other side, so they have an idea what's going on. And it's

1 important for each side to have their experts hear what the
2 testimony is, so.

3 615, the sequestration rule would say ordinarily --
4 require that only parties, individual parties, representatives
5 or organizations' experts who needed to hear the information for
6 the factual basis to support their opinions or others who
7 have -- where it can be demonstrated that their presence is
8 essential to prosecute or defend the claim. It seems to me that
9 this meets a couple of those different categories, so it makes
10 sense to have them both present.

11 MR. MILLER: Thank you, Your Honor.

12 THE COURT: So, let me tell you what I suggest makes
13 sense in connection with this particular issue. And I want to
14 make the most out of this afternoon's hearing. We have both
15 experts here. Their schedules may not allow us to have them
16 both here on the back-up date that we have in January. The
17 trial is set to start in January and we want to know what --
18 what we can rule on beforehand and what's not.

19 While I'm not definitively ruling this today, it seems
20 to me that a number of the challenges that were brought with
21 respect to the government's expert testimony with regard to
22 accident reconstruction, it seems to me that of those challenges
23 to Sergeant Manning's report, it is unlikely that I would be
24 convinced that he lacks knowledge, training, experience,
25 background, education or skill to testify about his

1 investigation, what he saw and what he did.

2 So, it's not likely to be that that's going to come
3 out. He certainly has, having reviewed his report, had training
4 and experience. Whether it matches up to the level of training
5 and experience that the defense expert has is a matter that
6 goes, I think, to the weight to be given to it. So I don't
7 think we need to waste time on that today.

8 Similarly, some of the opinions expressed in his
9 report that were objectionable to the defense, the government is
10 no longer planning on offering. So we don't need to spend time
11 on that today.

12 So, for example, we won't have testimony regarding the
13 presence of controlled substances. There won't be any testimony
14 regarding the possibility that there were effects of CDS in the
15 system of the defendant. And there'll be no evidence regarding
16 the reading of the speedometer at the crash scene. So, we don't
17 need to take time on that. The government has, I think,
18 approached this in a very appropriate fashion and trimmed out
19 things that are objectionable so we don't have to spend time on
20 that.

21 Further, it's inconceivable to me that I would not
22 rule that Sergeant Manning would be able to talk about his
23 observations, what he saw, measurements he personally took,
24 photographs he took, description of the scene, his role as the
25 accident investigator.

1 What is the area of greatest dispute in this case is
2 the opinion on speed. That issue focuses on methodology,
3 sufficient facts and data, reliable methodology reliably
4 applied. And that seems to be the most critical issue because
5 the speeds that were -- the range of speeds that were expressed
6 in the report is the one that goes to the central focus of what
7 has been challenged by the defendant.

8 So, that's where I think we can get the most bang for
9 our buck today. That's what would help me the most. And my
10 suggestion is, in terms of how we proceed, since this is an
11 advance evidentiary ruling and not the trial where the parties
12 will want to have the opportunity to lay out the experience of
13 their experts, go through each step that they take, offer it all
14 in, it seems to me the best way to do this would be as follows:

15 To have Sergeant Manning begin the testimony where he
16 is on the stand under oath and cross-examined by you,
17 Mr. Miller, on the speed issue. That way, you can get out
18 whatever questions you want to ask, have the record about what
19 his testimony is on methodology and how he applied it. Let
20 either of the -- whichever of you two are going to be handling
21 this examination or will be handling it today be able to
22 rehabilitate. And then that might give us time, Mr. Miller, for
23 your expert to take the stand. And if I can do that, I can have
24 both of them testify and I may even be able to rule today.
25 That's my proposal.

1 At trial if both experts are called, the proponent
2 will put them on and go through whole soup to nuts. That makes
3 the most sense to me as to how we get the most bang for our
4 buck, and allows me to be able to get the information I need to
5 make my ruling. Can we live with that?

6 MS. WEISMAN: Government can, Your Honor.

7 MR. MILLER: Certainly, Your Honor.

8 THE COURT: All right. Sergeant, so you're in the
9 firing line. Come on up, sir.

10 And what I'd like you to do, if you don't mind,
11 Sergeant, is face Ms. Smith, who is our courtroom deputy. Raise
12 your right hand. She'll swear you in and then we'll get you
13 seated, and we can go from there.

14 MATTHEW MANNING, GOVERNMENT WITNESS, SWORN

15 THE DEPUTY CLERK: Please state your name for the
16 record. Please spell your last name.

17 THE WITNESS: My name is Matthew Manning. Last name
18 spelled M-A-N-N-I-N-G.

19 THE COURT: All right. Sergeant Manning, before we
20 get started on the examination, I know that you've testified
21 your share of times in cases in your career with Park Police and
22 I -- so, this is somewhat old hat, but for purposes of today's
23 hearing, do me a favor. Keep your voice up so I can hear, so
24 our court reporter can hear. Speak slowly and distinctly.
25 Sometimes, I can tell you, one from experience, I'm a fast

1 talker. Slow it down a little bit because she has to write down
2 everything that's said.

3 Do you have a copy of your report with you?

4 THE WITNESS: In my bag back here.

5 THE COURT: Why don't you go get it, because you'll
6 want to refer to it, I'm sure.

7 THE WITNESS: Thank you.

8 (Pause.)

9 THE COURT: Is that a copy that you have prepared of
10 his report?

11 MR. MILLER: Your Honor, we actually have a witness
12 binder. I mean, a exhibit binder. If I could just put it up on
13 the stand.

14 THE COURT: Go ahead, sure.

15 MR. MILLER: And we have a copy for you.

16 THE COURT: Okay. Thank you very much.

17 Oh, you've given me a copy already.

18 During the examination, sir, you can refer to your
19 report. It may well be the case that Mr. Miller has put your
20 report in that notebook. And since your filing may be different
21 order than what that is, we want to make sure we marry it up so
22 we know what we're talking about, we're talking about the same
23 pages.

24 If you need to look at your report in order to refresh
25 your recollection or see a precise measurement or whatever,

1 you're free to do that. Just say you want to do it and we can
2 move from there.

3 Please answer the questions directly. Don't guess,
4 don't speculate. You're smart enough to know that you don't
5 argue, because it doesn't look good in front of the jury or the
6 judge. So just answer the question as best you can. And if a
7 question is not clear, say so.

8 If you're asked a question, you want -- you need to
9 explain it, you can answer -- if you're giving a yes or no
10 question and you need to explain it, but you can answer yes or
11 no with an explanation, then try to answer it yes or no and then
12 give an explanation. If you can't answer yes or no because it
13 needs an explanation, say that. I'll make sure you can do that,
14 okay.

15 THE WITNESS: Okay.

16 THE COURT: The lawyers in this case are terrific. No
17 one is going to try to cut you off or argue with you, so just
18 tell us what you did and why you did it, and that's what we need
19 to know.

20 And with that in mind, Mr. Miller.

21 MR. MILLER: Thank you. And, Your Honor, may I
22 inquire. Based on Your Honor's instructions, I think I'll skip
23 over questions about general qualifications. But if the Court
24 doesn't object, I might ask some specific questions as it
25 relates to the CSY analysis and the use of --

1 THE COURT: No problem with that. I'm just talking
2 about, you know, he's gone through the schools. You've read the
3 cases that counsel for the government cited under the Fourth
4 Circuit that was Judge Hazel's recent case. If you use that as
5 a yardstick, he's going to qualify. So, let's talk about --

6 This is the measurements that we're talking about for
7 purposes of speed, so let's go on in there. And you ask
8 whatever questions you need that are relevant to that.

9 MR. MILLER: Thank you, Your Honor.

10 CROSS-EXAMINATION

11 BY MR. MILLER:

12 Q Good afternoon, sergeant.

13 A Hello, sir.

14 Q Sergeant, if you would take a look, there's a binder next
15 to you and it's got some numbered exhibits. And I would ask if
16 you can just look at Exhibit One and Exhibit Eight, and if you
17 can just verify if you recognize Exhibit One as being your
18 curriculum vitae or resume?

19 A Yes, item one is reflective of a copy of my curriculum
20 vitae.

21 Q Thank you. And Exhibit Eight -- I'm sorry, would Exhibit
22 Nine be the Supplemental Criminal Incident Record, which
23 contains your Accident Reconstruction Report?

24 A It appears so, yes.

25 THE COURT: Just a quick question.

1 First of all, when you need to look at a document, you
2 can take whatever time you need to look at it to make sure your
3 answers are accurate. There's water in the pitcher in front of
4 you.

5 And it's an awkward set up here. If I was in charge
6 of the world, I would probably have the witness podium right
7 here and the questioner's podium right here, because your
8 natural tendency is to go left to look at the report and 45
9 degrees or 15 -- probably 25 degrees to the right of that, and
10 each time you're talking away from me being able to hear you.

11 THE WITNESS: Okay.

12 THE COURT: So, let's remember that the questioner is
13 over there. Politeness says, you look at the questioner when
14 they ask you a question, but I got to hear the answer. So keep
15 that in mind, if you could.

16 I'm sorry, Mr. Miller.

17 MR. MILLER: Thank you, Your Honor. And will we
18 follow the local practice on reports? I'm sorry, on exhibits,
19 unless --

20 THE COURT: Yes, for purposes of this hearing, all the
21 exhibits are in for the hearing.

22 MR. MILLER: Thank you, Your Honor.

23 BY MR. MILLER:

24 Q So, sergeant, we're going to be talking particularly today
25 about something called Critical Speed Yaw Analysis. That term

1 is familiar to you, I assume?

2 A Yes.

3 Q And can you tell the Court where it was that you learned
4 about how to use that technique?

5 A I initially learned it through my training as a crash
6 investigator, through we call it Crash Two and Crash Three
7 School, which is a course held by the Maryland Crash
8 Reconstruction Committee up in Baltimore.

9 Q And did you use particular treatises or guides or reference
10 materials as you learned about this method and as you applied it
11 in this case?

12 A I used what materials I still had from my class notes, et
13 cetera.

14 Q And in particular, are you familiar with -- are you
15 familiar with an institute called the Institute of Police
16 Technology and Management based at the University of North
17 Florida?

18 A In passing, yes.

19 Q And in particular, are you familiar with the literature
20 published with the lead author being John Daily and a series
21 called Fundamentals of Traffic Crash Reconstruction?

22 A Much more so now.

23 THE COURT: I'm sorry, I didn't hear that.

24 THE WITNESS: Much more so now.

25 BY MR. MILLER:

1 Q And by that answer, you mean in connection with this case
2 you've reviewed those materials?

3 A Yes, sir.

4 Q And have you previously testified in a court about --
5 specifically about your use of the Critical Speed Yaw Analysis?

6 A No.

7 Q So this would be the first time?

8 A Yes.

9 Q And the accident in this case occurred in February of 2018.
10 Prior to that time, how many times would you say you had used
11 the CSY Analysis?

12 A If I may, in training purposes or in real world
13 circumstances?

14 THE COURT: Why don't you break it down for each?

15 THE WITNESS: Okay. For real world in a court case or
16 a reconstruction I conducted in a practical manner, this is the
17 first time I applied it. However, in training, probably a few
18 dozen times.

19 BY MR. MILLER:

20 Q And in your report, you mentioned using something called
21 Total Station?

22 A Yes.

23 Q And that's basically a type of surveying equipment that's
24 used in accident reconstruction, is that accurate?

25 A Correct.

1 Q And again, thinking about February, 2018, how many times
2 would you say you had operated a Total Station system in
3 connection with an accident reconstruction?

4 A For actual crash scene, real world crash scene, this is
5 probably, possibly, my sixth or seventh time. And then in
6 conjunction with additional training, couple dozen times.

7 Q And part of the process is you use Total Station to create
8 data and then one can create CAD diagrams from that data; is
9 that correct?

10 A Yes.

11 Q And again, at the time of this February 2018 accident, how
12 many times would you say that you had done had process,
13 extracting and creating CAD data from a Total Station?

14 A Probably about a dozen in real world and training
15 experiences.

16 Q So, from the most fundamental level, would you agree that
17 the Critical Speed Yaw Analysis is specifically for use in cases
18 where a car was actually in a Critical Speed Yaw?

19 A With the observance of yaw marks, yes.

20 THE COURT: In other words, you wouldn't use it for a
21 skid. You had to use it for a yaw?

22 THE WITNESS: Yes.

23 BY MR. MILLER:

24 Q And in addition of the Court's question, you also wouldn't
25 use it in the case of a spin, correct?

1 A No.

2 Q So the mere fact that you see tire marks on a pavement
3 isn't enough to make this the right method. It has to be
4 evidence that the car was in a Critical Speed Yaw?

5 A Correct.

6 Q And it's fair to say your report doesn't describe any
7 measurements or analysis that you did to rule out the
8 possibility that the vehicle was in a slide or a spin?

9 A I suppose not.

10 Q So, did you do any investigation as an alternative
11 possibility to rule out the possibility of an impact with
12 another vehicle, something called a phantom vehicle?

13 A So, in conjunction with speaking to a witness on scene,
14 myself and another officer walked the entire scene, both on the
15 shoulder as well as the travel portion of the roadway. We
16 looked for any possible debris, broken lights, any sort of
17 plastic that may have been impacted off of a bumper and we were
18 unable to find any evidence of that.

19 Q And is that process you described, is that reflected
20 somewhere in your report?

21 A I don't recall if it is or not.

22 Q The reason why you want to exclude the possibility of
23 impact from another vehicle is that the loss of control that
24 would result from impact from another vehicle typically would
25 not be a Critical Speed Yaw, correct?

1 A Correct.

2 Q So if there were an impact with another vehicle, Critical
3 Speed Yaw Analysis wouldn't be the right approach to determine
4 speed, right?

5 A Correct.

6 THE COURT: Can I ask a question? Are there written
7 statements from those witnesses someplace?

8 THE WITNESS: Yes.

9 THE COURT: All right. Have they been provided to me?
10 Do we know? I'm not saying they should have. I'm just asking
11 whether they were attached and I just missed them?

12 MS. WEISMAN: Not as far as I know, Your Honor.

13 THE COURT: Okay, all right. Is it possible for them
14 to be made available for me at some time or the government to
15 let me know if these witnesses are -- they plan on having them
16 testify at trial? Do we know that yet?

17 MS. WEISMAN: We expect to have one non-police witness
18 and we do have a written statement from her. I didn't bring it
19 with me, but I can get it.

20 THE COURT: All right, that's fine. I don't need a
21 statement from any --

22 Well, we'll put that aside now. I'm sorry to
23 interrupt him.

24 BY MR. MILLER:

25 Q So, moving on and speaking generally, Critical Speed Yaw

1 Analysis involves the application of the formula, correct?

2 A Yes.

3 Q And that formula can only produce reliable results if there
4 is sufficient and correct data to plug into the formula,
5 correct?

6 A There are several variables that need to be extrapolated
7 from the scene to be put into that formula.

8 Q Okay. So I want to talk about the steps that you took to
9 determine that this car was, in fact, in a Critical Speed Yaw.
10 And am I right that a key determination would be to examine the
11 tire marks on the scene?

12 A Yes.

13 Q And what you are looking for is known as Critical Speed Yaw
14 marks?

15 A Yes.

16 Q And, obviously, not every tire mark one could find would
17 qualify as a Critical Speed Yaw mark?

18 A Generally, yes.

19 Q In other words, there are specific attributes that a tire
20 mark would have to have in order for you to label it a Critical
21 Speed Yaw mark?

22 A Yes.

23 Q And one of those attributes would be that you should see
24 angled striations of the tire?

25 A Correct.

1 Q And the reason why you would see angled striations is
2 because the tire is simultaneously rolling, but also slipping
3 laterally, is that accurate?

4 A Yes, the lateral stability of the vehicle is affected where
5 the center of gravity is being rotated around the center of
6 gravity. So therefore, the tires are still spinning straight,
7 but the vehicle is now turning sideways.

8 Q And under the literature in this field, it's an important
9 practice to document the tire marks that you see by taking
10 photographs?

11 A Yes.

12 Q And that's so that either you or somebody else coming after
13 you to examine the accident, I mean, they can determine whether
14 or not they think you came to the correct conclusions?

15 A It can be helpful, yes.

16 Q And in fact, you took photographs on the scene that night
17 showing what you believed to be the path of the vehicle,
18 correct?

19 A No, I did not take any pictures.

20 Q So, did someone take pictures?

21 A Yes.

22 Q And who took the pictures?

23 A That was our evidence technician, Officer Blackmore.

24 Q And were you present at the time that that officer took
25 those pictures?

1 A I was on the scene at the same time, but I did not follow
2 him around or work with him directly.

3 Q Okay. So, in terms of -- well, have you subsequently seen
4 the pictures that officer -- is it Blakemore you said?

5 A Blakemore, yes.

6 Q Have you subsequently seen the pictures Officer Blackmore
7 took?

8 A Yes.

9 Q Okay. Let me ask if you can look in the binder and these
10 are Exhibits 2A through I.

11 And I'll note for the Court and, indeed, if the witness
12 prefers, we have available the digital originals of those photos
13 to show on the screen if that's more -- if there's any trouble
14 seeing from these printouts, but if we start with the printouts
15 --

16 THE COURT: Actually, the quality in the printout is
17 usually better than the quality in the screen, but whatever way
18 you want to do it is fine with me.

19 MR. MILLER: The Court has his own binder, so we'll
20 start with the printouts.

21 BY MR. MILLER:

22 Q If I can just ask you to look at 2A through I, do those
23 appear to be the photographs that were taken by Officer
24 Blackmore?

25 A Yes.

1 Q And do you know how it was that Officer Blackmore selected
2 the specific photographs to take?

3 A I don't.

4 Q And there -- to the best of your knowledge, are these the
5 only photographs that were taken of the vehicle path that night?

6 A I'm sorry. Are you speaking like a generality or just this
7 specific picture?

8 Q Well, I'm speaking of Exhibits 2A through 2I. Are you
9 aware of any other photographs that were taken in an attempt to
10 document the specific path that the vehicle had taken across and
11 off the road that night?

12 A I don't recall if this is the exclusive amount. I mean,
13 it's quite a few of them here, but I can't say for certain
14 there's only nine or there's ten or there's 12.

15 Q Well, let me ask you this: Based on your -- you indicated
16 you had reviewed the pictures at some point afterwards. Based
17 on your memory, are there any photographs that we've obviously
18 omitted from these exhibits?

19 A From what I can see, no.

20 THE COURT: So, sergeant, were there any photographs,
21 other than the ones taken by Officer Blackmore, that you relied
22 upon when performing your analysis and doing the CSY
23 calculations?

24 THE WITNESS: No, sir.

25 BY MR. MILLER:

1 Q Do you recall if there was a video taken on the scene that
2 night as well?

3 A I don't have any knowledge of that.

4 Q So, you yourself did not review or rely on a cellphone
5 video or any type of video of the scene to make your analysis?

6 A Not for this analysis, no.

7 Q And it's -- based on these photographs, it's fair to say
8 that the photos were all taken while fire, EMS, police, first
9 responders, generally speaking, were on the scene; is that
10 correct?

11 A Yes.

12 Q And they were taken at night?

13 A Yes.

14 Q And no one returned to the scene in daylight to take
15 additional photographs? These are all the photographs, correct?

16 A As far as I know, yes.

17 Q Okay. So, looking at these photographs, it's fair to say
18 that there -- none of these photographs depict tire marks with
19 angled striations, is that accurate?

20 A This particular photograph that's showed, you cannot see
21 striations, no.

22 Q And if you could look through the full series of the
23 exhibits, so that's -- I'm sorry, of two exhibits. And that's
24 2A, 2B, et cetera through I. If there's anyone of those in
25 which you can identify for us a tire mark with an angled

1 striation, if you could please let us know.

2 A Let's say starting with letter G, golf.

3 Q And could you indicate in some way where in this you see a
4 tire mark with an angled striation?

5 A Am I able to touch the screen or --

6 THE COURT: Sure.

7 MR. MILLER: And --

8 THE COURT: I'm sorry, I missed that, sir.

9 THE WITNESS: I'm sorry. I thought there would be,
10 like, a little teleprompter thing.

11 THE COURT: My understanding is the technology should
12 allow you if you touch it or draw a line next to it, that it
13 should show up on it, but maybe that's not on there. Maybe that
14 function has to be turned on.

15 Do we have the laser?

16 MR. MILLER: If that's not working --

17 THE COURT: I can get a laser pointer that Shante can
18 get for us. Just don't shine it in my eyes. Hopefully the
19 batteries are working.

20 (Pause.)

21 THE COURT: Can we go back to G?

22 MR. MILLER: So that would be 2G.

23 THE COURT: 2G.

24 (Pause.)

25 MR. MILLER: Your Honor, while we're waiting for the

1 technology to -- if I could just ask the witness a general
2 question.

3 BY MR. MILLER:

4 Q Am I correct in describing the image you're looking at, 2G,
5 as reflecting a view on the left-most side of the roadway as --
6 relative to the direction of traffic?

7 A Yes, that would be a photo taken from the left travel lane
8 looking into the center median.

9 Q And as we've looked back through the exhibit to --
10 There we go. And now I would ask if you could use the
11 laser pointer to point out where it is?

12 A So, you got tire right here with the angled striations and
13 going right here with the angled striation if you look close.

14 Q Thank you.

15 And just to return to my previous question, as we went
16 through the series 2A through 2G, it's accurate to say that
17 those photographs start at the right side of the roadway, move
18 across the center of the roadway and eventually by the time we
19 get to 2G, we're at the left-most side of the road surface,
20 correct?

21 A Yes.

22 Q So any of the prior photographs, 2A through F, you were not
23 able from the photographs looking across the road to identify
24 any tire marks with angled striations?

25 A On Exhibit F, foxtrot, you can pick up tire marks coming

1 from the center lane line going into the median. With this
2 photograph I have right here, you can't say with absolute
3 certainty.

4 Q So, in other words, there may be a tire mark, but from the
5 photograph, you can't say whether that's a angled striation or
6 just a tire mark?

7 A From this photograph, no.

8 Q And then we looked at G. I guess, after G, just looking
9 at --

10 THE COURT: Can we go back to G for a second. I'm
11 looking at my photograph, sergeant, and I'm not -- what I see is
12 just -- I'm not --

13 It looked to me like when you were using the marker
14 that you were pointing to, sort of, a dark smudge in the lower
15 left-hand corner of that photograph where I see some white lines
16 that look like they're diagonal that are superimposed on, sort
17 of, a blackish smudge. Am I looking at the right place?

18 THE WITNESS: Yes, sir.

19 THE COURT: Okay. Are the white lines the striations?

20 THE WITNESS: That's part of them, yes.

21 THE COURT: Thank you. And now I know where I'm
22 looking.

23 BY MR. MILLER:

24 Q And, Officer Manning, just as we get past 2G, so that would
25 be 2H or 2I, are there any further photographs which show --

1 which show angled -- tire marks with angled striations?

2 A So on Exhibit H, hotel, again you can see the diagonal
3 marks along the concrete curbing in a perpendicular manner. As
4 well, if you look further up the line along the curbing, you can
5 make out diagonal striations as well.

6 Q So, based on your review of these photographs, you've
7 identified two of them in which angled striations appear and
8 both of those are taken at the leftmost side the road surface,
9 correct?

10 A Correct.

11 THE COURT: Is that paint, red paint? Did someone
12 paint?

13 THE WITNESS: Yes. So, in documenting tire evidence,
14 it can be short-lived sometimes. So that's one of the first
15 things we'll do when we get on the scene is try to document that
16 in case the marks start to fade or some other interference. We,
17 at least, have a reference point when we're trying to document
18 the scene.

19 THE COURT: Got it, I understand.

20 BY MR. MILLER:

21 Q So, just focusing on the ones you have identified where you
22 said you recognize those as angled striations. How would you
23 distinguish those as being a Critical Speed Yaw mark as compared
24 to, for example, what's sometimes known as an ABS scuff mark
25 that's left from braking?

1 THE COURT: What are those initials again?

2 MR. MILLER: ABS.

3 THE COURT: Alpha --

4 MR. MILLER: Alpha, bravo --

5 THE COURT: Sierra?

6 MR. MILLER: Yes.

7 THE WITNESS: Short for anti-lock braking system, ABS.

8 THE COURT: Anti-lock Braking System?

9 THE WITNESS: Yes. So with the anti-lock braking
10 system, that's basically a control in the vehicle that gives a
11 series of pulses to the brakes in order to try and stop it. So,
12 if you skidding on ice in the winter time, you'll feel that
13 kicking, that vibrating feeling in your peddle. That's actually
14 the computer pushing -- pumping the brakes essentially for you
15 faster than a human can do it.

16 My understanding of this application is that that
17 would leave the brakes to lock or the wheels to lock up, and it
18 would be a solid state tire mark, rather than a tire
19 free-spinning continually making those striation marks.

20 Q And so, looking at the particular marks that you see, what
21 about these characterizes them as Critical Speed Yaw marks as
22 opposed to ABS scuff marks?

23 A Again, I'd go off the striation marks.

24 Q In terms of identifying these tire marks, did you identify
25 which wheel of the car produced each mark?

1 A Yes, the left most on this photograph was from the front
2 passenger side real and the side adjacent to the front of the
3 cruiser here would have been the rear passenger side wheel.

4 Q And what's your basis for identifying them that way?

5 A Based off the vehicle positioning, in this photograph, you
6 can't see it. When this car moves away, there's additional
7 furrow marks that go down the slope into the woods, which is
8 consistent with --

9 THE COURT: So, sergeant, as I'm looking at H now, I
10 see the one red paint on the left lower corner and I see the
11 white diagonal stripes.

12 THE WITNESS: Yes, sir.

13 THE COURT: And then towards the front right wheel of
14 the police cruiser, if I take a line from there and draw it back
15 to the right rear corner and make a straight line there, it
16 looks like red paint from that approximate location. One in the
17 lower right corner, one about three-quarters of a inch below the
18 yellow line.

19 THE WITNESS: Mm-hmm.

20 THE COURT: And then directly in the same line of
21 travel to the curb, what I would call the curb where I see
22 another red mark.

23 THE WITNESS: Yes.

24 THE COURT: Am I to conclude from that that it's your
25 testimony that the left wheel was where the lower left corner

1 red stripe was, the car mark was and the right wheel was in the
2 right lower corner going that way? So if I drew lines parallel,
3 that's where the car was going. Is that what you're saying?

4 THE WITNESS: Yes. And my contention would be the
5 vehicle is now, basically, sideways at this point. And this
6 mark would be from the front driver side -- I'm sorry, from the
7 passenger side wheel. And that's the back of the vehicle coming
8 around to the rear, right rear passenger side.

9 THE COURT: So the car has spun around that way and is
10 going that way?

11 THE WITNESS: Yes.

12 THE COURT: Okay. Sorry, Mr. Miller.

13 BY MS. WEISMAN:

14 Q And, Sergeant Manning, did you -- did you note if the tire
15 marks had a uniform width or if they had a variable width?

16 A I can't say right now. I don't recall.

17 Q Did you measure the width of the tire marks?

18 A You're talking about the actual -- I don't believe we did,
19 not on the scene, no.

20 Q Not on the scene, okay.

21 Now, if tire marks are Critical Speed Yaw marks, so if the
22 vehicle was in a Critical Speed Yaw, you would expect to find
23 those tire marks in a curve; is that correct?

24 A Yes.

25 Q And if I could show you what I've marked as Exhibit Three

1 in the binder, do you recognize this as a extract from your
2 report, a diagram from your report?

3 A Yes, this is the two-scale map of the scene I documented
4 and this is also what I did to help figure out this formula for
5 this crash with the overlays of the vehicle over top of the tire
6 marks.

7 Q And I note that the line between the vehicle models here
8 are straight, correct? They're not showing in a curve, is that
9 accurate?

10 A I believe they are arcing.

11 Q You believe they are arcing despite the way that they're
12 shown here?

13 A I feel if you take the -- again, these cars out here,
14 that's more for my purposes of trying to figure this crash out.
15 If you look at the other diagram, which was what was originally
16 created on the CAD program which just shows the tire marks, you
17 can see the arc clearer.

18 MR. MILLER: Court's indulgence.

19 THE COURT: Sure, take your time.

20 BY MR. MILLER:

21 Q Let me ask you to turn then to Exhibit 13. And do you
22 recognize this as something from your report or detail of
23 something from your report?

24 A Yes, I used this as a representation to show what I was
25 trained on how to look for a crossover point of a vehicle going

1 in a yaw.

2 Q But this is not -- this is not extracted from the data from
3 this particular scene? It's just a general representation?

4 A The tire marks that are visible on here was from that
5 original diagram. However, as I said, I superimposed this
6 templar vehicle over top of the tire marks to help me figure
7 this out.

8 Q I'm sorry to go over this. The sort of fainter lines that
9 we see here, are those meant to be the tire marks?

10 A Yes, those are representative of the passenger side tire
11 marks.

12 Q And are they the tire marks from the data in this case or
13 are they just a general illustration of what the tire marks look
14 like.

15 A That's what I got from the Total Station.

16 Q Okay, so this case.

17 And again, I think -- it's fair to say that as we're zoomed
18 in here again, it does appear that they are traveling in more or
19 less a straight line. Is that a fair representation?

20 A I think if you take the whole totality of the line, it will
21 show an arc.

22 Q So, what I'd like to do is, let's assume for a moment that
23 what you have found here are Critical Speed Yaw marks and I'd
24 like to talk about the data that you need to collect to create a
25 reliable analysis.

1 So, one very important piece of information is going to be
2 the radius of the curve that is left by the tires; is that
3 correct?

4 A Yes.

5 Q And the -- another thing you need to determine is you need
6 to determine the middle ordinate of that curve?

7 A Yes.

8 Q And you need to determine the friction or the drag factor
9 on the road?

10 A The coefficient of friction, yes.

11 Q So, start with the radius. So the first thing to do that
12 is you need to actually determine what the vehicle's path was in
13 order to determine the radius of that path, correct?

14 A Correct.

15 Q And the method that we're using here is to look for the
16 tire marks and determine it based on tire marks, correct?

17 A Ideally, yes.

18 Q And the, the literature would suggest that the best way to
19 do that would be to actually do it on scene by measuring the
20 tire marks right there; is that correct?

21 A Absolutely.

22 Q And if you look at Defendant's Exhibit Four and this is,
23 obviously, just an illustration, but the, the police officers
24 depicted here, does it appear that what they are doing is
25 measuring a chord and the middle ordinate of a curved tire mark?

1 A Yes.

2 Q And in particular, you would measure a -- in ideal
3 circumstances, you would measure a 30-foot cord and then you'd
4 measure the middle ordinate of that, correct?

5 A Yes.

6 Q Now, that's not what you did in this case?

7 A Unfortunately, I didn't have all the information that these
8 officers had on scene.

9 Q What you did as an alternative method is you used Total
10 Station that we've talked about to take some measurements and
11 then create a CAD file from that, correct?

12 A Yes.

13 Q And then, so when you then made the calculations to
14 determine the radius, you made those off of that CAD chart, the
15 CAD drawing?

16 A Yes.

17 Q And in particular, the CAD drawings would have been
18 generated based on points that you plotted along what you
19 believed to be the vehicle's path?

20 A Yes.

21 Q Now, from -- again, would you agree that the literature in
22 the field would suggest that if you're using Total Station data
23 to estimate the radius, you want to measure the tire marks
24 basically once every meter?

25 A I had never heard that until this discovery came out. This

1 is the first I ever heard of it.

2 Q Well, in this particular case, in the area where you
3 measured the chord and middle ordinate, you used three points
4 along the right front tire mark; is that correct?

5 A I don't recall the specific amount of points. I was
6 operating the Total Station. Another officer was holding the
7 reference point as we did the scene.

8 Q Okay. So let me -- just to clarify, when you say you
9 operated the Total Station, as I understand this unit, there's
10 sort of a base station that has all the electronics and then
11 there's, like, a rod that someone else holds? Is that accurate?

12 A Yes. So, basically, a Total Station is a piece of surveying
13 equipment. It's set up on a tripod and it's leveled out.
14 There's a little level bubble on there. And when you place it
15 on top, it also has a feature where it will level out and there
16 is fine adjustments you make.

17 So, basically, you have a X and Y axis and you want the
18 little circle to be right in the middle. Once that's been
19 established as level, basically, the principle is that there's a
20 geometric prism that a laser is shot out to that reflects off
21 of. And based off of the time and distance, the time and, you
22 know, lasers and known speed coming off of that, they can make a
23 determination off of the distance and then plot that into our
24 mapping program.

25 Q And just to clarify, you would have been the person

1 operating the main unit that was on the tripod, is that
2 accurate?

3 A Yes.

4 Q And then who was the person operating the rod portion with
5 the reflector?

6 A Officer Tomasiello.

7 Q Officer Tomasiello, okay.

8 And do you know what, if any, training Officer Tomacello
9 has had in Total Station or in accident reconstruction?

10 A Yes, at time of this incident, Officer Tomasiello had
11 completed both Crash One and Crash Two courses, so he was almost
12 reconstructionist. And since then, he has gone on to be a
13 reconstructionist. He's a member of our Traffic Safety Unit
14 now.

15 Q And do you know in -- were you close enough to Officer
16 Tomasiello to see where, specifically, relative to the tire mark
17 he was placing the rod?

18 A I don't recall exactly where on the tire mark it was, no.

19 THE COURT: What's that last name? Is it Cellar?

20 MR. MILLER: Officer Tomasiello.

21 THE WITNESS: I can -- T-O-M-A-S-I-E-L-L-O, Badge
22 Number 680.

23 THE COURT: Thank you.

24 THE WITNESS: Yes, sir.

25 BY MR. MILLER:

1 Q To be more specific, would you have been able to see if he
2 was placing the rod on the inside or the outside or the center
3 of the yaw marks?

4 A I can't make that determination. I can't remember how far.
5 You know, again, this is a long scene. Exactly where the -- I
6 mean, if I look at the notes, I can make a determination of
7 approximate distance, but I couldn't tell you exactly where on
8 the tire mark it would have been.

9 Q Were you directing him that specifically as to where to put
10 it or was he using his own judgment where to put it?

11 A A combination of both.

12 Q And were you directing him by radio or by voice, or how?

13 A Both. It depend on how close we are if we do it by voice
14 or we'll switch to, like, a alternate radio channel to do it
15 that way.

16 Q But sitting here today, you don't remember giving him a
17 specific instruction, like, put it on the inside, put it on the
18 outside, put it on the center?

19 A Not that I recall, no.

20 Q And so, Officer Tomasiello assisting you, together you used
21 the Total Station to plat -- if I say it's three points along
22 the right front tire mark and two points along the right rear
23 tire mark, does that sound about what you might have done for
24 the area in which you measured the radius?

25 A Well, yeah, I guess for the area -- for the whole entire

1 line, it was more than two or three points, but I think in that
2 vicinity it was probably around that.

3 Q And did you -- when you platted these yaw marks, did you
4 plat them to indicate that they had varying widths compared to
5 each another?

6 A No, we just platted it as one line.

7 Q Okay. And when you use the Total Station, are you familiar
8 with something called the Reference Measurement Protocol?

9 A I'm not -- we might be down different vocabulary here, but
10 you're saying to use a reference point to begin the shooting of
11 the scene?

12 Q Let me ask you another way. Is there a method by which one
13 calibrates the Total Station equipment before using it each
14 time?

15 A Yes. So, when we're setting up, you want to find true
16 north or due north of the unit. Usually accomplish this by
17 using a compass. And what we'll do is set up a fixed point of a
18 prism on that point supported by a tripod. And we use that,
19 we'll shoot that initially to get our bearing for our true north
20 point. And that way when it's transferred over into our CAD
21 files, it's mapped out so that north is up essentially.

22 Q When making the CAD drawings from the data, did you have
23 data for the dimensions of the Nissan; such as the length, the
24 width, the wheel base, the track, things like that?

25 A No, I believe I looked that up.

1 Q Well, when you say you looked it up, did you look it up for
2 the specific vehicle or did you just use, kind of, a standard
3 vehicle model for the CAD?

4 A Are you saying in terms of the track width formula or the
5 platting of the vehicle on the tire marks?

6 Q For any part of this process, when we see on the CAD, when
7 we see a model of the vehicle, when we see anything that relies
8 on the vehicle itself, were you using a generalized to vehicle
9 or were you using data specific to this particular make and
10 model of car?

11 A For the usage of the formula, I utilized the track width of
12 the vehicle as I found from the Internet. For the sake of this
13 diagram, I don't recall if I did that or not.

14 THE COURT: So let me just ask this: So you went on
15 the Internet, got the specs of the measurements for this
16 particular make and model and year of vehicle?

17 THE WITNESS: Yes.

18 THE COURT: And you used that in your calculations?

19 THE WITNESS: Yes, in 2011 Nissan Altima, the track
20 width is 61 inches. So, that's what I utilized in my formula.

21 BY MR. MILLER:

22 Q Now, if you could turn to Exhibit Five. And do you
23 recognize this as a generalized diagram of taking two chords and
24 two middle ordinates off of a curved tire track.

25 A Yes, it's from Daily.

1 Q And so, are you familiar with the standard and principle
2 that in order to accurately measure radius, you should take two
3 chords along the path of travel?

4 A Well, there's conflicting data in that regard. It's
5 obviously preferred if you can get two chords, if you have the
6 space for it. The other resource that was provided that didn't
7 mention the necessity of a second chord is a preferred method.
8 However, in this instance, based on where I made my
9 measurements, I didn't have enough room to perform a second
10 measurement.

11 Q So, in this instance, you did one chord measurement?

12 A Yes, sir.

13 Q And you did that from the point that you believed to be the
14 crossover point?

15 A From where I could determine a wheel crossed over, yes.

16 Q Okay. And I think we looked before, but -- at Exhibit 13,
17 that actually illustrates where you, where you took to be the
18 crossover point?

19 A Approximately, yes.

20 Q Okay. And what a crossover point is, that's where the rear
21 wheel starts to track outside the front, correct?

22 A Correct, the hallmark of a yaw.

23 Q Okay. Now, if I turn back to Exhibit Nine, which you've
24 indicated is your report and I'm going to turn to page -- which
25 is indicated as -- it's near the back. It's by a Bates Number

1 of CAS0178. It's actually the last page of the exhibit.

2 THE COURT: While he's looking, can I ask a follow-up
3 question to one of your questions, Mr. Miller?

4 When Mr. Miller was showing you Exhibit Five, which
5 was the sketch from the Daily book that talks about how to use
6 two chords with the middle ordinate to be able to get the
7 measurements to do the Critical Speed Yaw calculation, I
8 understood you to say that where you have the evidence on the
9 scene to be able to do that, that's the gold standard, but you
10 didn't have that on the scene.

11 And I thought I heard you say that there was a
12 reference that told you that you could do it with just one. Is
13 that accurate? Some training material, some book, some manual
14 that you relied on to -- when you were faced with the situation
15 where you couldn't make the two chord measurements with the
16 middle ordinate?

17 THE WITNESS: That was my understanding, yes. I mean,
18 obviously, you need one to do the formula. And two is the
19 preferred method, but one is acceptable.

20 THE COURT: Is there a particular reference, like,
21 sort of the bible of this or training material that you were
22 given that told you you could do this, or is it just your being
23 faced with a circumstance where you couldn't make two because
24 there was not evidence for two to make, so you made one because
25 that was available? Do you understand what I'm saying?

1 THE WITNESS: I think so. I mean, I know the one
2 resource that provided the --

3 Can you hand me up the -- what's the -- not Daily, but
4 the other one?

5 BY MR. MILLER:

6 Q Sergeant, are you referencing a -- bites from Tower
7 Publishing, the author is Jon B. Quiznowski?

8 A Quiznowski, I'm sorry, yes, sir. I mean, just reading
9 that, it doesn't say anything about needing a second one. And
10 going through my old notes, what I could find, there's nothing I
11 ever saw that said you're required to have a second chord.

12 THE COURT: Okay. So, let me make sure I got this
13 right.

14 From the notes that you kept while you were in
15 training, there was nothing in there that you were instructed
16 that you needed the two chords, correct?

17 THE WITNESS: Not that I could find them, no, sir.

18 THE COURT: And there was no handout or link online,
19 or other materials that you can recall from your training that
20 said, you got to have the two chords?

21 THE WITNESS: No, sir.

22 THE COURT: Okay, all right. I just want to make sure
23 I got that. Thank you.

24 BY MR. MILLER:

25 Q Sergeant, it's fair to say that if a vehicle is in a

1 Critical Speed Yaw, it should be losing speed as it yaws?

2 A Yes, based on the vehicle sliding over the friction of the
3 roadway, it should be, yes.

4 Q And so, the radius, if one takes two chords and, therefore,
5 determines two different radii for that curve, it should
6 actually reduce because the curve -- because the vehicle is
7 actually slowing down, correct?

8 A Yes, that's one of the reasons why it's encouraged to get a
9 second chord is to try and -- if that second chord is slower
10 than the first one, showing the vehicle slowing.

11 Q And some people might even describe the curve that a
12 vehicle in a Critical Speed Yaw makes as almost a spiral, is
13 that accurate?

14 A I don't think I've ever heard it referred to as that.

15 Q Well, in any event, as it loses speed, the radius of -- if
16 you measure the radius of the earlier part of the curve, it's
17 going to be longer than the radius at the later part of the
18 curve because it's losing speed, correct?

19 A I believe in theory, the slower the yaw, the larger the
20 radius should be or the larger the middle ordinate should be.
21 So that you have more arcing mark.

22 Q And if I have it reversed, I apologize, but the point being
23 is that one of the ways that you can identify that a particular
24 path that a vehicle traveled indicates that it was in a Critical
25 Speed Yaw is precisely because from the formula you can tell

1 that the vehicle actually got slower as it went around that
2 curve?

3 A I don't know how to answer that.

4 Q Returning to -- we had discussed the issue of the crossover
5 point that I think you had marked in Exhibit 13. And I'd ask if
6 you could turn to the last page of Exhibit Nine, which is a
7 diagram Bates Number CAS0178. Are you on that page?

8 A Yes. I'm sorry, you said 177 or 178?

9 Q 178.

10 A Okay.

11 Q And looking at the vehicle models here, isn't it true that
12 actually every one of those vehicle models shows the rear
13 tracking outside the front.

14 A If you look at the passenger side, it would be indicative
15 of that, yes.

16 Q Now, in terms of this process we've discussed of measuring
17 chords and the middle ordinate from the Daily, the Daily
18 literature that we've been discussing here, it's stated that a
19 middle ordinate of less than six inches becomes two sensitive to
20 the measurement because a small error in measuring the middle
21 ordinate can grow to a large error in the radius determination.
22 Are you familiar with that issue?

23 A I did read that in the Daily. I also saw in his case study
24 for that he used a example of a incident with a less than six
25 inch middle ordinate.

1 Q And in this case, the middle ordinate that you measured was
2 two inches, correct?

3 A Yes, that's what I got.

4 Q And when you say two inches, was that 2.0, two point --
5 what tolerance did you measure it to in terms of, like, quarters
6 of an inch or eighths of an inch? What was that measurement?

7 A Just whole numbers.

8 Q Whole numbers, okay.

9 Now, are you familiar that Daily teaches that if you're
10 measuring a 30 foot cord, the middle ordinate should be measured
11 to a tolerance of an eighth of an inch?

12 A I am now, yes.

13 Q But at this point, the measurement, we just know it as two.
14 There's no --

15 A Yes.

16 Q -- no other significant digit there?

17 A Correct.

18 THE COURT: What would you have marked if it was
19 between two and three, like the halfway mark? Would you put 2.5
20 or just two? I mean, how would you split that difference if it
21 was right around halfway?

22 THE WITNESS: That's just what the CAD program came up
23 with. It was either .17 or .25?

24 THE COURT: All right. Thank you.

25 BY MR. MILLER:

1 Q We talked earlier about the fact that friction or drag
2 factor on the road is a key component of the formula?

3 A Yes.

4 Q And in this case, you used a range or sort of a reference
5 value, correct?

6 A Yes, sir.

7 Q And so that you did that because what you didn't do was
8 some sort of physical testing on the road to actually measure it
9 with an accelerometer or some other method, correct?

10 A Yes. As you mentioned, there are several ways to make a
11 determination of a coefficient of friction. One of which is
12 using what's called a Vericom Accelerometer, which I don't
13 believe --

14 COURT REPORTER: Excuse me. You said, one is using
15 the?

16 THE WITNESS: The Vericom. That's the trade name of
17 the accelerometer, which I don't believe our department has one
18 or I don't think they ever had one.

19 Another way to do it is conducting skid tests. So
20 basically, you have to pull the ABS chip out of the vehicle,
21 shut down the entire roadway for a commuter route, and then
22 basically slam on your brakes to see how far the vehicle travels
23 in a skid or you can get what's called a drag sled. Basically,
24 the amount of force it takes to pull the sled across the surface
25 of the roadway, you can make calculations off of that.

1 Just based on how our department has been doing it, we
2 usually just range of a coefficient of friction?

3 THE COURT: I'm sorry. So help me out. The first
4 method was?

5 THE WITNESS: It's called a Vericom.

6 THE COURT: How do you spell that?

7 THE WITNESS: V-E-R-I-C-O-M, maybe.

8 THE COURT: Okay. So there's a Vericom method and
9 that requires technology your department doesn't have, right?

10 THE WITNESS: To my knowledge, yes.

11 THE COURT: And you didn't use that?

12 THE WITNESS: No, sir.

13 THE COURT: Okay. The other would be to do a skid
14 test measurement with a drag sled or the other method?

15 THE WITNESS: Well, the skid test would actually
16 involve using a car, one of our cruisers. Essentially taking
17 the -- overriding the anti-lock brake system in the vehicle and
18 then taking it out to known speeds and then locking up the
19 brakes essentially, and then measuring the skid marks.

20 THE COURT: So that was not done?

21 THE WITNESS: No, sir.

22 THE COURT: And the drag sled was not done?

23 THE WITNESS: No, sir.

24 THE COURT: So, tell me how you did come up with the
25 coefficient of friction.

1 THE WITNESS: Yes. So we ranged -- different surfaces
2 had different ranges of coefficients of friction. For example,
3 concrete is a little more, if you want to call it, sticky or
4 adhesive. So if you're stopping a vehicle, it's going to have
5 more friction with the tire, whereas dry asphalt is -- has more
6 of a coefficient of friction than, say, grass or a wet roadway
7 or a roadway with snow on it. It's basically a value that we
8 range.

9 THE COURT: Was there a standard set of data that told
10 you that, say, for -- I'm just making these numbers up. They're
11 not going to have any meaning. That concrete was five and that
12 asphalt was three, and that a dirt road was ten and you just
13 measured whatever that standard data was against what conditions
14 were or how did you come up with?

15 THE WITNESS: There's studies out there and
16 published -- I believe IPTM has a publishing out there that
17 shows a standard range of frictions for it. And then just going
18 back to how -- you know, our reports, how I've always done it in
19 my reports is I'll just put a range on there. Usually .7 to .8
20 for asphalt, dry asphalt.

21 THE COURT: Do you know where you got that standard
22 range?

23 THE WITNESS: Again, just looking from what I've been
24 trained and then just going through old reports and being taught
25 by other more senior officers. That's what they've always used.

1 BY MR. MILLER:

2 Q Now, in your report you indicated, I believe, that the
3 vehicle had -- had been on the right shoulder, correct?

4 A Yes.

5 Q And that the vehicle had actually started to lose control
6 when it was on the right shoulder?

7 A I believe so, yes.

8 Q And you also noticed that there was debris on the right
9 shoulder?

10 A There was some loose rock and graveling material present
11 along the curbing.

12 Q And objects such as gravel, loose rock or debris, that has
13 the potential to change the friction or the drag factor?

14 A In of itself, yes.

15 Q And did your calculations take into account the change in
16 friction that would have occurred if the loss of control had
17 started in an area that was gravelly or had debris in it?

18 A No.

19 Q If there's an imbalance of friction from one side of a
20 vehicle to another -- in other words, if one side is on a
21 different type of road surface than another, would you agree
22 that a CSY analysis isn't the appropriate analysis is use?

23 A Depending on the circumstances, it's possible.

24 Q More generally, there are -- there is more than one
25 approach to measuring or to estimating the speed of a vehicle

1 with an accident reconstruction, correct?

2 A Yes.

3 Q And if you use more than one approach and they come to the
4 same conclusions, that strengthens the overall conclusion,
5 correct?

6 A Absolutely.

7 Q In this particular case, how many approaches did you
8 actually take to test the conclusions you had reached about the
9 vehicle speed?

10 A Based on the data presented to me, this is the only one I
11 was able to work with.

12 Q So, for example, you didn't do an analysis of the energy
13 loss during the yaw?

14 A I'm not sure I understand what you mean.

15 Q If there's an approach that involves measuring or
16 estimating energy loss during the yaw, that's not an approach
17 you used here?

18 A I can tell you I didn't.

19 Q One of the conclusions that you state in the report is and
20 I'll read the following: "Smith's failing to properly restrain
21 the child back seat passenger, as well as the lack of a proper
22 child restraint system was contributory to the fatal outcome of
23 the collision."

24 From an accident reconstruction standpoint, did you take
25 any steps, such as measurements or simulations or any other

1 accident reconstruction steps to test or validate that
2 conclusion?

3 A That there wasn't a car seat in the car?

4 Q No, the conclusion that the absence of a car seat led to or
5 contributed to the fatal outcome of the accident?

6 A Well, I think that common sense would dictate that if a
7 child is being thrown around inside of a vehicle that's
8 unrestrained, their chances of survival dramatically go down as
9 opposed to if they were properly restrained.

10 Q So to be clear, your conclusion was based on that -- what
11 you have described as a common sense assumption. It wasn't
12 based on running some alternative simulation of had the child
13 been restrained or any other accident reconstruction approach,
14 correct?

15 A No, common sense.

16 MR. MILLER: All right. Your Honor, I have no further
17 questions at this point.

18 THE COURT: Okay. So that I can understand that
19 opinion with regard to the car seat, I gather, sergeant, that at
20 the scene no car seat was found in the car or around the car,
21 correct?

22 THE WITNESS: No, sir.

23 THE COURT: Were you able to determine from interviews
24 with witnesses or anyone else that they were able to confirm
25 that there was no car seat?

1 THE WITNESS: So, just looking inside the vehicle, all
2 the buckles were in an upright position. There were no
3 seatbelts that were actually buckled in. Having children
4 myself, I know that if you have a car seat, the buckle goes
5 through the seat and will retain it in there. There's nothing
6 like that to be found. We walked the woods. We couldn't find
7 any evidence or any indicia --

8 THE COURT: So, it's based upon observation at the
9 scene, seeing buckles in a position that suggested that there
10 was no car seat and not finding a car seat and knowing that
11 there was a child who was ejected from the car and injured, and
12 not finding a car seat, from that you reached the conclusion
13 that there was no car seat. And if you're in a -- if you're in
14 a rollover accident and there's an unrestrained person,
15 regardless of whether they are a child, particularly a child,
16 and that rollover occurs, that that is going to contribute to
17 injuries that they would sustain.

18 A Absolutely.

19 MR. MILLER: Your Honor, may I ask a follow-up just to
20 the Court's questions?

21 THE COURT: Yes, sure, absolutely. I just wanted to
22 make sure I understood.

23 FURTHER CROSS-EXAMINATION

24 BY MR. MILLER:

25 Q So, Sergeant Manning, just to clarify, assuming that the --

1 assuming that the factual question is answered that there was no
2 car seat, did you do any type of analysis of any type to
3 simulate or in any way calculate or determine what would have
4 happened to a child occupant of that vehicle had the child in
5 fact been restrained in that same accident?

6 A I mean, we don't have a magic program that can correlate
7 exactly. The vehicle hit numerous trees, stumps, logs. So
8 depending on how the vehicle went through, I don't think you can
9 make that determination based on how many impacts this vehicle
10 had.

11 I mean, certainly, you can look at the photograph and see
12 the damage to the passenger compartment, the intrusion. And
13 depending on where she was seated, you can make your own
14 inferences on it, but from what I could tell, obviously,
15 survivability just in learning and common sense, if you're
16 wearing a seatbelt, that's why it's the law, it saves lives.
17 Seatbelt do save lives.

18 I can't tell you how many crashes I've handled on the BW
19 Parkway not fatality related where people walk away from crashes
20 because they were wearing their seatbelts. And then there's
21 definitely crashes where we've had -- that definitely looked
22 survivable and the person is deceased because they weren't
23 wearing a seatbelt. That's just something that was ingrained in
24 me growing up and it's just something I look at now. There was
25 no evidence of any kind and I don't think anybody can make the

1 determination had she been in a seat or not -- I mean, it just
2 takes one rogue log to hit you in the head and you're dead.

3 I mean, I can't make that determination and I don't think
4 really anybody could. But certainly if she was properly
5 restrained and remained inside the cage of the vehicle, her
6 chance of survival would have been higher.

7 Q The conclusion, the specific conclusion of your report,
8 it's not the -- it's the basis of the application of some sort
9 of scientific process or method. It's more just based on your
10 observations and as you described, the common sense, correct?

11 A Yes, sir.

12 Q Thank you.

13 THE COURT: Anyone wish to ask any questions of the
14 sergeant with regard to the questions that he has been asked?

15 MR. DRAUGHON: Yes, Your Honor. Considering the
16 format is different than expected, can we take a five or ten
17 minutes break?

18 THE COURT: Sure, absolutely no problem. It's the
19 right thing to do for our court reporter as well.

20 So, sergeant, we're going to take a break now. Don't
21 discuss your testimony with -- don't discuss this issue. You
22 can talk about timing or where the bathroom is or anything like
23 that, but don't discuss your testimony with anyone until we come
24 back and get finish with the examination, okay.

25 THE WITNESS: Yes, sir.

1 THE COURT: And why don't we take a 15-minute break,
2 come back here at 25 minutes to three, okay.

3 (Brief recess.)

4 THE COURT: Sergeant, just a question that may have a
5 couple parts to it. During your examination by Mr. Miller, he
6 from time to time referred to the article on accident
7 reconstruction techniques by Mr. Daily and there were some
8 exhibits in the notebook from his materials. Do you recall
9 that?

10 THE WITNESS: Yes.

11 THE COURT: And I understood from your testimony that
12 you have reviewed those materials now, but that they weren't
13 part of your training or what you would look at in doing
14 reconstructions prior to the reconstruction that you did in this
15 case, is that right?

16 THE WITNESS: Yes, I did not have those documents.

17 THE COURT: Fair enough.

18 As you look at the materials from the Daily text or
19 treatise, I'm just going to call it, and you compare it with
20 your training, would you accept today that this would be a
21 reliable reference -- a reliable reference source to consider in
22 the future?

23 THE WITNESS: I think moving forward, I would utilize
24 that, yes.

25 THE COURT: Okay, thank you. That's all I have, sir.

1 MR. DRAUGHON: Your Honor, earlier in this -- in
2 Mr. Manning's testimony, you indicated interest in the witness'
3 statement. AUSA Weisman was able to make a copy of it.

4 THE COURT: Yeah.

5 MR. DRAUGHON: Would you just want a copy of it?

6 THE COURT: I don't think it matters for his
7 testimony, but I am just curious if there was --

8 All right, cards on the table. If there is -- there
9 are fact issues that may impact on my ruling. Whether or not
10 the, the defendant's vehicle had its right side wheels on the
11 non-asphalt roadway where there was loose material as if you
12 were trying to pass on the right instead of on the left, is
13 information that could impact on this. In the --

14 Since neither of the accident reconstruction witnesses
15 observed the accident, then in the absence of any other
16 evidence, such as a photograph or CCTV or something like that to
17 show how it occurred, then the source of information that might
18 provide that fact or refute it would be from witnesses.

19 If there is to be a witness who will testify or whose
20 comments reduced to writing were relied upon as part of the
21 factual basis for opinions to be made at trial by either expert,
22 then that would be part of the factual basis and I am required
23 to evaluate the sufficiency of the factual basis to support
24 opinions rendered.

25 So even if a witness didn't testify as you well know

1 under Evidence Rule 703, the facts upon which an expert
2 testifies may be perceived by or made known to the expert prior
3 to or during the course of trial. And if of the type reasonably
4 relied upon by experts in that field they need not themselves be
5 admissible provided the reliable but inadmissible information
6 may not be disclosed to the jury to help them to evaluate the
7 weight to give to the expert's opinion, unless the Court
8 determines the probative value substantially outweighs the
9 danger of any prejudice.

10 So even if the government was not going to call an
11 eyewitness who said, yeah, I remember that this occurred or
12 there was an accident or there was a collision, there was no
13 collision, whatever that evidence may be, if those statements
14 were part of what Sergeant Manning relied upon and if people who
15 do what he does in his profession as an accident
16 reconstructionist would rely upon witness observations, which it
17 would be inconceivable to me that they would not, then that
18 could be part of his basis to support his opinions. So, that's
19 where I'm going on that.

20 Now, if he's not going to opine that there was -- I
21 mean, I don't know what evidence there would be to put the car
22 on the shoulder, other than debris maybe. I don't know, but I'm
23 curious as if there is any witness statement that was part of
24 his factual basis to support the opinions and his opinions
25 include what he expressed here, no evidence of a collision,

1 number one; and number two, car on the shoulder. That's where
2 I'm going with that.

3 I take it, Mr. Miller, you've seen this, the witness
4 statements?

5 MR. MILLER: It was produced in discovery, yes.

6 MR. DRAUGHON: Is the main screen working? I wanted
7 to use the Elmo.

8 THE DEPUTY CLERK: Sure.

9 THE COURT: And you will have to overcome your
10 ordinary soft voice and give me that closing argument projection
11 for me to hear it, if you don't mind.

12 MR. DRAUGHON: I certainly will, Your Honor. Thank
13 you.

14 THE COURT: That's much better.

15 DIRECT EXAMINATION

16 BY MR. DRAUGHON:

17 Q Good afternoon, Sergeant Manning.

18 A How are you, sir?

19 Q I'm not going to recap the testimony that you did, so I
20 want to go straight into looking at some images that were taken
21 of the crash scene. Some of these you will be familiar with
22 through your examination with Mr. Miller.

23 Now, showing you what has been marked as Government's
24 Exhibit Number One. Can you explain to the Court what we're
25 looking at on the right side of this image?

1 A Yes. This is a photograph taken looking in the north
2 orientation of the right portion of the northbound lanes of the
3 Baltimore-Washington Parkway.

4 Q Now, there are red markings on the right side. What is
5 that?

6 A That is paint that I used, spray paint to mark tire marks
7 that I observed on the scene.

8 Q Now, a question about tire marks as they relate to yaw
9 marks. Are all yaw marks tire marks?

10 A No.

11 Q Let me clarify that. Are all tire marks yaw marks?

12 A Are all tire marks yaw marks? No.

13 Q But all yaw marks are tire marks?

14 A Yaw marks are produced by tires, yes.

15 Q When you're looking for yaw marks, what are some signs that
16 indicate to you that it's a yaw mark?

17 A The hallmark of a yaw mark or a Critical Speed Yaw mark is
18 a presence of striation marks on the roadway, which is
19 indicative of a wheel free-spinning while the vehicle is going
20 basically in a perpendicular manner to the course of travel in
21 the roadway.

22 Q If a vehicle is in a yaw, would it typically have
23 striations?

24 A If it's in a Critical Speed Yaw, then yes.

25 Q Now, would you have to have striations for it to be a

1 Critical Speed Yaw?

2 A You would not have to.

3 Q I'm now going to show you what has been marked as
4 Government's Exhibit Two.

5 THE COURT: So, help me out with that, sergeant. I
6 thought I understood from your direct examination that you can
7 have skids, which are not Critical Speed Yaw marks. You can
8 have sliding marks of a tire that are not Critical Speed Yaw
9 marks. You could have, for example -- this is probably not a
10 phrase that people use anymore, but in my generation there was a
11 phrase called "peeling out" or "braking traction" where someone
12 accelerates very quickly and leaves skid marks on the road.

13 THE WITNESS: Sure.

14 THE COURT: But I understood that when you are looking
15 for evidence of Critical Speed Yaw to be revealed by tire marks,
16 you are looking for those striations?

17 THE WITNESS: Absolutely, yes.

18 THE COURT: And if you have tire marks on the surface
19 that don't have striations, for purposes of determining whether
20 there was Critical Speed Yaw, you would conclude from that
21 evidence alone that there was not, is that right?

22 THE WITNESS: I believe I understand. Yeah, I believe
23 that's what it is.

24 THE COURT: Okay, got it.

25 THE WITNESS: But every tire mark, you can analyze

1 skid marks and there's different formulas they can use for skids
2 or even for your example of peeling out, you can possibly
3 measure that. And based on the friction point on the road as
4 well as gravity, you could deduce speeds off of that.

5 THE COURT: Sure, but for using Critical Speed Yaw
6 Formula, you would have to have yaw marks on the tires to be
7 able to use that formula as opposed to calculating speed from
8 some other type of tire mark?

9 THE WITNESS: That's my understanding, yes, sir.

10 THE COURT: And there are separate formulas for each
11 of those functions?

12 THE WITNESS: Yes.

13 THE COURT: Got it.

14 BY MR. DRAUGHON:

15 Q Just to make sure I understand. If you were to only see
16 tire marks that did not have striations, would you use Critical
17 Speed Yaw Formula?

18 A No.

19 Q But if you saw some tire marks with striations and some
20 without, would you still take into consideration the location of
21 the tire marks without striations?

22 A I would document it, absolutely.

23 Q Now showing what has been marked as Government's Exhibit
24 Number Two. What are we looking at here and I've zoomed it in
25 some for like the lower two-third portion of the image?

1 A So, this is a photograph facing north along the left side
2 of the northbound lanes of the Baltimore-Washington Parkway.
3 You can see my paint marks up at the top as well as in the
4 center. It's not quite as clear in this photo, but you can see
5 the diagonal marks left by the wheel as it went down the
6 roadway.

7 Q I going to indicate with my pen. I'm now pointing at the
8 right side. There's a red line slightly above "Government
9 Exhibit Number Two". Is this one of the marks that you're
10 referring to?

11 A Yes, that's a mark documented on scene.

12 Q Now, focusing on what would be the top of the screen, there
13 appears to be two diagonal lines that are parallel. Are those
14 the other marks you're referring to?

15 A Yes.

16 Q And what did those marks indicate to you about what
17 happened on the scene?

18 A So, from examining what is on scene, appeared to me the
19 vehicle was in a slide slip or, basically, the vehicle as yawing
20 sideways, but the tires were still free-spinning in a forward
21 direction which would cause that mark.

22 Q Now, based on your recollection and you can tell me whether
23 or not it's visible here, the tire mark being indicated by my
24 pen, which again is on the right side of the image, did that
25 tire mark have striations based on your recollection?

1 A From my recollection, yes.

2 Q It did?

3 A Yes.

4 Q I'm now going to show you what has been marked as
5 Government's Exhibit Three. Can you tell the Court what we're
6 looking at here?

7 A Yes. Again, this is a photograph taken on the left side of
8 the northbound lanes of the Baltimore-Washington Parkway. In
9 this image you can see a series of curb strikes as well as tire
10 marks or I should say striation marks along the left curbing
11 area, concentrated right in this area, as well. It's not as
12 clear on the top portion, but principally in this photograph,
13 right in this area. And then you can see a series of furrows
14 going through the grassy median down towards the woods.

15 Q I'm going to follow up with you about where the furrows are
16 leading to, but as a principle would skid marks have striations?

17 A They should not, no.

18 Q So how can you know looking at this picture whether or not
19 the Nissan remained in a yaw motion versus entering into a
20 skidding motion?

21 A Again, I'm basing this on the yaw marks, which is
22 indicative of the wheels still free-spinning as opposed to a
23 skid mark where the tires would be locked up and it would be a
24 solid line going across the roadway.

25 Q Sergeant Manning, I'm going to show you what has been

1 marked as Government's Exhibit Four in a moment. You just
2 indicated that there were furrows that led to somewhere in the
3 woods. What are we looking at here in Government's Exhibit
4 Four?

5 A That is the position of the final and controlled rest of
6 the vehicle involved in this collision.

7 Q And if you can recall, when you walked the path of the
8 scene that day, what did you observe next to this vehicle and
9 going back into the road?

10 A Directly adjacent to this vehicle, there was children
11 boots, a puddle of blood on the ground, numerous car parts,
12 vines you can see is very overgrown with foliage. Moving
13 backwards, you can see along the tree just above the vehicle the
14 fresh scarring mark along the bark of the tree.

15 And as you follow the path back through, you can clearly
16 see almost like somebody made a path out through that area of
17 leaves disturbed, dirt kicked up, fresh damage to additional
18 logs and trees going back up all the way to the edge of the wood
19 line, which matched right up with the furrow marks in the grass.

20 Q Two more images I want to show you. First, Government's
21 Exhibit Number Five, what are we looking at here?

22 A So, this is a photograph, again, along the left side of the
23 roadway, northbound Baltimore-Washington Parkway.

24 Unfortunately, that officer kind of parked where he shouldn't
25 have in this, but you can clearly see the presence of striation

1 marks along the left curbing area in the gutter pan. And you
2 can see the tire mark of the striations going pretty much
3 equivalent to the front wheel of that cruiser that's parked
4 there and follow the solid tire mark back into the left travel
5 lane.

6 Q Now showing you Government's Exhibit Six, which is the last
7 photograph we'll use. What is this here, Sergeant Manning?

8 A So, this is a photograph of the northbound
9 Baltimore-Washington Parkway left side. This is slightly a
10 little more north than the last photograph. It shows the
11 striation marks along the left gutter pan, curb strike and then
12 a series of furrows in the grass, furrows or digs into the
13 terrain of the soil.

14 And then you follow it straight into almost a
15 tunnel-looking area where the vehicle started impacting with
16 different trees and branches and foliage as it went downslope
17 into the wood line.

18 Q Do you recall which tire left the striation in Government
19 Exhibit Number Six?

20 A The two most prevalent ones that I saw on scene, I believe,
21 are from the front passenger and the rear passenger.

22 Q I'm going to try to put these side by side. So, on the top
23 I have Government's Exhibit Number Three. And in this exhibit
24 there appears to be two lines. And on the bottom is Government
25 Exhibit Number Six, which appears to only have one line.

1 Referring to Government's Exhibit Number Six, is that
2 striation the bottom or the top line in Government Exhibit
3 Number Three?

4 A Do you mind scooting three down a little bit? It's cutting
5 off the top part.

6 All right. So, the photograph in six is the northern line
7 that's on this photograph in three. So not the one directly in
8 the forefront, but the one that's further up north or higher up
9 in the picture.

10 Q So based off of your observation of these two photos, did
11 the front right tire and the front rear tire both leave
12 striation marks on the left shoulder?

13 A That was my determination, yes.

14 Q Sergeant Manning, did you speak to any witnesses that
15 evening?

16 A I did.

17 Q What did the witness say about what happened?

18 A She stated that she was traveling northbound the
19 Baltimore-Washington Parkway just prior to the Route 198 exit.
20 She was in the right travel lane and she looked up in the
21 rearview mirror behind her and saw a vehicle rapidly approaching
22 the rear of her vehicle. She said she was traveling
23 approximately 55 to 60 miles per hour. The vehicle was
24 approaching her, quote, like she was standing still.

25 She said the vehicle went on the right shoulder to try to

1 pass her and made almost a 45-degree angle across the travel
2 lanes and disappeared into the woods.

3 MR. MILLER: Your Honor, I'm going to object to the
4 last answer as hearsay. I understand the Court's purpose in
5 this part of it, but in terms of the Court actually accepting
6 the truth of the matter asserted for reaching the Court's
7 opinion as to whether the testimony is admissible or reliable, I
8 don't think that's appropriate use and it should be limited to
9 the fact that the examiner heard the testimony, if that's the
10 type of thing examiner would rely upon, but I don't think the
11 Court should accept it for the truth independently.

12 THE COURT: Well, he wasn't there, so he has no
13 independent way of confirming it was or wasn't true, but he
14 heard that as part of his investigation duties.

15 I'd be shocked if any present or former police officer
16 would say that they do not take into consideration eyewitness
17 reports when doing accident reconstruction work. And he can, to
18 the extent that he relies upon that as part of his opinion, say
19 that he relied upon that if he can show why it was reliable in
20 his view and base that into his opinion.

21 And it would be relevant for the limited purposes of
22 my ruling to determine whether or not it can be part of the
23 factual basis to support the opinions the government might
24 offer. So that's the purpose for which I would rely upon that.

25 Now, can you go back to Exhibit One? I want to make

1 sure I'm understanding something here.

2 So, sergeant, this picture, Exhibit One as I
3 understand it, this is the travel lane that the witness was in
4 that you just made reference to heading northbound on the
5 Parkway just before the 198 exhibit or exit, is that right?

6 THE WITNESS: Yes, where the two gentlemen with the
7 reflective vests are standing, that's the right travel lane she
8 said she was operating in.

9 THE COURT: Now, as I look at that, what I see when I
10 start with the -- looks like a truck wheel. You'll see there's
11 a right front quarter panel of some sort of truck, might have
12 been an ambulance and the wheel is at a 45-degree angle.

13 THE WITNESS: Yes.

14 THE COURT: I want you to move to the right from that
15 with your eyes as I go forward. I see what appears to be road
16 surface, whatever that may be made of, as you move to the right
17 and I see a white line.

18 THE WITNESS: Yes.

19 THE COURT: Do you see that white line?

20 THE WITNESS: Correct.

21 THE COURT: To the right of the white line, I see what
22 looks like, just by measuring it compared to the vehicle, what
23 looks like it could be four or five feet of some sort of surface
24 which appears to be rougher than the surface to the left of the
25 white line.

1 THE WITNESS: Mm-hmm.

2 THE COURT: Appears, although that may not actually be
3 the case by virtue of the frame work that it's angled downward a
4 little bit. And then to the right of that looks like a poured
5 concrete flat portion; one, two feet wide that has a curb next
6 to it to the right of which appears to be some amount of soil
7 with leaves on it to the right of which is a wall. And it
8 appears as though as -- as that curb moves northbound that the,
9 that the soil with leaves diminishes. It looks like a very
10 narrow pizza slice. Did I accurately describe what that picture
11 shows?

12 THE WITNESS: Yes. So the portion of the roadway up
13 until the curb is -- consisted of asphalt. Then it's a
14 concrete-type curb or gutter pan.

15 THE COURT: So when you talk about the -- when
16 Mr. Miller was asking you about the differential in friction
17 between the road surface where the right -- the passenger side
18 front and back wheels were and the driver side front and back
19 wheels were, when the loss of control began and the -- and the
20 maneuver that led to the going across the line into the other
21 lane of the northbound traffic and off the side of the road,
22 show me on this picture where the right wheels would have been.
23 Do you understand the question?

24 THE WITNESS: Yes. So, again using my diagram.

25 THE COURT: Yeah, yeah, yeah.

1 THE WITNESS: So, this would actually be the beginning
2 of those lines that are on my diagram.

3 THE COURT: That's the loose surface, the gravelly
4 loose surface you talked about, the different friction?

5 THE WITNESS: So, what I was talking about for loose
6 gravel is, basically, the rocks from the asphaltic surface of
7 the roadway getting kicked up and kind of pulling along the
8 gutter pan there. It's not like it was a soft shoulder or,
9 like, a grassy side. It's not like --

10 For example, traveling up on Interstate 95 where it's
11 just the road ends and then it's grass and dirt, this roadway,
12 which is not up to interstate standards, is a concrete, raised
13 concrete curb along it. And what I was referring to as the
14 loose gravel material was loose rocks and et cetera, debris
15 that was in the gutter pan area.

16 THE COURT: Got it. And so it's not like --

17 You've seen a gravel road, you know, a country road
18 that just has dirt with gravel on top. It's not that?

19 THE WITNESS: No, sir.

20 THE COURT: You've got a different texture and,
21 perhaps, grade of surface, asphalt surface on the right-hand
22 side of the white line than the left, right?

23 THE WITNESS: It should in theory be the same. I know
24 when they were just repaving it recently, it's one solid run of
25 the same stuff. But again, I can't attest to the photographic

1 quality of this or what, but in theory it's the exact same
2 surface.

3 THE COURT: And then the little gutter thing with the
4 curb is poured concrete, right?

5 THE WITNESS: Yes, sir.

6 THE COURT: Now, I'm trying to imagine how a car would
7 pass someone in the -- if you're facing north, the right half of
8 the northbound lanes, is there enough room to pass on the right?
9 If you passing at one point, the cars have to be parallel with
10 each other, right?

11 THE WITNESS: Oh, absolutely.

12 THE COURT: So, is there enough room from the dotted
13 white line on the left that divides the two portions of the
14 northbound lanes and the wall for a car to be traveling in the
15 travel lane of the right side of the northbound lane and another
16 car of the size of the defendant's vehicle to be side by side
17 with it?

18 THE WITNESS: Absolutely. We conduct travel stops on
19 the side of the road on the shoulder and vehicles are able to
20 pass by us with no problem where it will fit right there. It's
21 tight, but we can do it.

22 THE COURT: All right. I just needed to see it in my
23 mind from where the pictures were to match that with the
24 descriptions of what's being there, okay.

25 BY MR. DRAUGHON:

1 Q Sergeant Manning, you mentioned that you spoke to a witness
2 and she made a statement. Did that witness say anything about
3 whether another vehicle impacted the Nissan?

4 A She did not make any reference to that, no.

5 Q And just to make sure I understand you, was it not
6 discussed or did she affirmatively say that there was no other
7 vehicle that impacted the Nissan?

8 A My recollection is she said nothing -- there's nothing
9 else.

10 Q You mentioned that you observed the Nissan on the scene and
11 after the fact; is that correct?

12 A Yes.

13 Q Was there anything on the Nissan that indicated that it was
14 impacted by another vehicle?

15 A From what I could tell on scene, no. I mean, again, the
16 caveat being the vehicle, you can see the condition of it at the
17 end was destroyed. There wasn't a straight piece of sheet metal
18 left on it, so it would very difficult to make that inference.

19 Q And when you say, from what you can tell, what are looking
20 for on a vehicle to determine if it was impacted by another
21 vehicle?

22 A So, this was a lighter-colored vehicle, more of a silver,
23 aluminum, gray, whatever you want to call it. So, a lot of
24 times in a lighter vehicle it's easy to make that determination.
25 You're looking for some kind of paint transfer, whether anyone

1 has been in a fender bender in the parking lot of the Giant.
2 You know, you bump a bumper, there may be a paint transfer, like
3 a darker-colored vehicle, perhaps. And you'll see either
4 scratches or that, kind of, filmy paint material.

5 You can also look for, like, a tire rub when the vehicle
6 tires are -- when the tires are moving around, you might see,
7 like, a black circular material or design on the side of the
8 vehicle or the back of the vehicle.

9 Q I understand. Thank you.

10 When you were being examined by Mr. Miller, you mentioned
11 using a Total Station and poles and other mechanisms to map out
12 the scene?

13 A Yes.

14 Q Was what you described in your examination with Mr. Miller
15 the standard practice of crash reconstruction?

16 A As far as I know. That's the way I was shown how to do it.

17 Q Now, you've had two diagrams in your report. You went over
18 one quite a bit with Mr. Miller and I'll show you that in a bit,
19 but for now, I want to show you Government's Exhibit Number
20 Seven. What is this here?

21 A So, this is the final product that was produced in the CAD
22 system. So this was the data that was platted on the scene. I
23 would say in point form and, basically, we connect the dots,
24 essentially, and we go through and was able to produce this
25 diagram. So this is the -- basically, how it came out from the

1 computer once I completed filling in the lines and making the
2 notations, et cetera.

3 Q Now, I want to follow up on Judge Grimm's line of
4 questioning. There appears to be a darker line running along
5 the right side of what appears to be the road. What is that
6 dark line?

7 A Yes, that's the stone wall we discussed previously, as he
8 described as a slice of pizza. Basically, you can see where the
9 darker line comes into conjunction with the curb line there.
10 And that was the area that photograph was taken that we
11 discussed a little while ago.

12 Q And the lighter lines that are, at least, partially on the
13 road or somewhat on the shoulder. What are those?

14 A Can you --

15 Q So indicating with my pen going across the lanes and into
16 the shoulder. What are those two lines?

17 A Yes, those are what I described as yaw marks on scene, the
18 tire marks that I observed them at.

19 Q Now, there's a starting point towards the bottom left of
20 this image. What connection does that have to the scene and the
21 crash as you understood it?

22 A So, that's where Officer Tomasiello and I first was able to
23 make -- discern where we saw tire marks beginning. They're very
24 faint at that point. And basically, we just tracked that line
25 all the way through to where we saw the pictures that are on the

1 left side of the roadway and where it entered into the center
2 median.

3 Q So, based on your observations at the scene and looking at
4 the diagram that you put together, at what point did the
5 defendant actually go on the shoulder, if you can reference the
6 diagram?

7 A I mean, prior to him losing control, it appeared in my
8 opinion that he was on the shoulder.

9 THE COURT: Can you use the laser pointer and show me
10 on that diagram, if you can do that, sergeant?

11 THE WITNESS: So you're saying where I believe he lost
12 control?

13 THE COURT: Yes.

14 THE WITNESS: Somewhere in this vicinity right here.
15 I can't say for certain where it was, but that's where the tire
16 marks started that we observed.

17 BY MR. DRAUGHON:

18 Q Now, referring you back to the left side of this image,
19 it's cut off, but prior to it being cut off, based on your
20 observations at the scene, what would that be?

21 THE COURT: The bottom or the top?

22 MR. DRAUGHON: The bottom left of the image.

23 THE WITNESS: Just how the road ends like that?

24 BY MR. DRAUGHON:

25 Q Right. So, in other words, before we get to this point,

1 what is the layout of the road before the bottom left portion of
2 this diagram?

3 A Okay. So, these travel lanes continue south of that
4 location. And prior to that is an exit onto eastbound Route
5 198. And then so, that's a third lane that must exit on to
6 eastbound Route 198. And then from there, there's a gore area
7 or kind of triangular area and the exit, which has grass and
8 woods in between there.

9 Q So, is it correct to say that there was a third lane and
10 then it narrowed into two lanes?

11 A I wouldn't use the word "narrow". There's two travel lanes
12 and then there's a third, if you call it, deceleration lane or
13 exit lane that continues off on to Route 198.

14 Q Understood.

15 Earlier today there was a discussion about whether or not
16 the lines we're looking at were curved or straight. Can you
17 explain to the Court why you decided that these were curved
18 lines?

19 A I mean, based on my visual observation, they appeared
20 curved to me. It's a slight curve, but it is curved.

21 Q If it was a straight line, would there be a middle
22 ordinate?

23 A Probably not, no.

24 Q In other words, do you have to have some amount of curve in
25 order to have a chord and a middle ordinate?

1 A Yes.

2 Q Now, when analyzing yaw marks, what would result in a yaw
3 line being more straight than curved?

4 A Can you -- I'm sorry, I'm not tracking that.

5 Q So, what factors would go into how curved the line ends up
6 being on your diagram?

7 A So, there's different factors that can associate with that,
8 whether it's the speed, the friction of the roadway, how the
9 vehicle is set up, whether, you know, there's suspension issues,
10 the vehicle is loaded weight-wise a certain way all can
11 potentially affect the dynamics of how it spins.

12 Q Now, based off of your speed calculation, which we'll get
13 to in a bit, is the image -- is this diagram consistent with yaw
14 marks that would have resulted if the defendant was going at the
15 speed that you calculated?

16 A Yeah, I got the speed off of these marks from the CAD
17 program.

18 Q I guess what I'm asking, if the calculation was incorrect
19 and, let's say, you got a speed of 40 miles per hour, would that
20 be consistent with yaw marks that look like this?

21 A Probably not. I think you can also look at the damage
22 profile of the vehicle and show that that's not -- the vehicle
23 is not going 40 miles per hour with that many impacts through
24 the trees.

25 Q Now, how did you know based on your experience that the

1 Nissan was in a Critical Speed Yaw?

2 A Again, I was relying upon the presence of the striation
3 marks, the curved striation marks that were present on the
4 roadway.

5 Q And how did you know that it remained in a Critical Speed
6 Yaw until it entered the dirt path?

7 A So, I could see no other evidence of, like, the tires
8 locking up, which would then create a solid line. No other --
9 really just a straight line or not a straight line. It was a
10 curved direct line that continued completely through the area
11 that I was looking at.

12 Q Based on your understanding, which tire would leave --
13 would typically leave the strongest yaw mark in a
14 counter-clockwise yaw?

15 A Typically, it's the front wheel, front passenger side wheel
16 and counter-clockwise.

17 Q Is there anything that might impact whether or not that
18 tire leaves the strongest mark?

19 A Again, there's many factors. It could be the friction.
20 The tire itself is a different quality. The composition of the
21 road surface. Not every tire will always leave yaw marks when
22 it's making them.

23 Q Did you analyze the tires on the Nissan?

24 A I looked at them, yes.

25 Q Did that include analyzing the tread levels on the tires?

1 A I looked at them, but I did not take any physical
2 measurements of them.

3 Q Right. So, based on your observations, were there any
4 tires that would have had less tread than the other tires?

5 A The front passenger side tire was nearly bald.

6 Q And how would the tire being nearly bald impact its ability
7 to leave a yaw mark?

8 A Again, as the tire spins along the roadway, it leaves
9 obviously a portion of the tire on the roadway. So, it could
10 affect the dynamic of how much tire tread is left on the roadway
11 or how much material is deposited on the roadway.

12 Q You mentioned that you took measurements. Did one of those
13 include a chord?

14 A Yes.

15 Q How long was the chord measurement that you took?

16 A I utilized a chord length of 30 feet.

17 Q Did you review the chapter provided by the defendant for
18 Daily?

19 A Yes.

20 Q Did Daily specify how long the chord should be?

21 A From what I could see, he always used 30 feet.

22 Q So you used 30 feet and it sounds as if from Daily's
23 writing, that was sufficient?

24 A Yes.

25 Q And you only used one chord; is that correct?

1 A Yes, sir.

2 Q Is that standard practice based on your experience?

3 A Now. I mean, I'm a little questionable because of the
4 different conflicting material. At the time, my understanding
5 was one chord was -- that's all you needed.

6 Q At what point did you read the Daily chapter?

7 A After it came out from discovery here.

8 Q Around -- so this year?

9 A Yes.

10 Q Around what month?

11 A October maybe.

12 Q When did you start doing crash reconstruction?

13 A I initially went through Crash One, Two and Three in 2014.

14 Q So, is it fair, if my math is correct, that that's over
15 five years?

16 A Yes.

17 Q In your five years of experience, was it standard practice
18 for the U.S. Park Police to use one chord measurement?

19 A That's my understanding, yes.

20 Q Which tires left the marks that you used when making your
21 measurements?

22 A I'm sorry, repeat that.

23 Q Which tires left the marks, the yaw marks that you used to
24 make your measurements?

25 A The front passenger and the rear passenger side tires.

1 Q And did you also measure a middle ordinate?

2 A Yes.

3 Q What was the length of that measurement?

4 A The chord was 30 feet, the middle ordinate was two inches.

5 Q How does that 2-inch measurement relate to examples in the
6 case study that you saw with Mr. Daily's writing?

7 A Mr. Daily in his case study, in his chapter provided the
8 crash example in which he utilized the middle ordinate of three
9 and one-eighth inch.

10 Q And just before I forget, you mentioned the Daily study.
11 Did you read the entire book?

12 A The entire book, no.

13 Q So, what is your exposure to Daily's analysis on yaw
14 formulas?

15 A Basically what was provided in that chapter.

16 THE COURT: Based on what, sir?

17 THE WITNESS: What was provided in that chapter in
18 discovery.

19 BY MR. DRAUGHON:

20 Q During your cross-examination, you mentioned that you only
21 relied on the photos that you were shown. Do you recall that?

22 A Yes.

23 Q Did you also rely -- to clarify, did you also rely on your
24 own observations?

25 A Absolutely.

1 Q And Total Station?

2 A Yes.

3 MR. DRAUGHON: Court's indulgence.

4 THE COURT: All right.

5 BY MR. DRAUGHON:

6 Q When you were discussing seatbelts, you mentioned that it
7 was common sense that a seatbelt would have changed the -- might
8 have impacted the fatality in the crash. How long have you been
9 a police officer?

10 A Eleven years in January.

11 Q Did you also take into account your experience when
12 answering that question?

13 A Absolutely.

14 Q Now, you mentioned that there are various factors. You may
15 not have been able to say whether or not a seatbelt would have
16 averted a fatality. Where was the child located at the crash
17 scene?

18 A Initially, the child was located towards the front of where
19 the vehicle came to final rest. So, forward, in a continuing
20 forward direction of where the vehicle came.

21 Q And are you describing something that is inside or outside
22 of the Nissan?

23 A She was outside of the vehicle.

24 Q Based on your experience, would a proper car seat have led
25 to the same result?

1 A A properly installed car seat should have kept her inside
2 the vehicle.

3 MR. DRAUGHON: Court's indulgence.

4 BY MR. DRAUGHON:

5 Q Now, Sergeant Manning, once you determined the chord,
6 friction level and middle ordinate, what did you do next?

7 A So, at that point, I utilized the formula that was taught
8 to me in reconstruction school that's a commonly accepted
9 formula in the world of crash reconstruction.

10 Q And based on that formula, what did you determine was the
11 speed of the vehicle after the defendant lost control?

12 A So, based on the factors that I factored in, I determined
13 speed between approximately 82 and 88 miles per hour, I believe.

14 MR. DRAUGHON: I have no further question, Your Honor.

15 THE COURT: So, sergeant --

16 THE WITNESS: Yes, sir.

17 THE COURT: -- looking at that exhibit on the screen

18 --

19 THE WITNESS: Mm-hmm.

20 THE COURT: -- which is Government Seven, my
21 recollection of your testimony a moment ago was that -- remember
22 when you were asked about what was below the space where the CAD
23 drawing begins the lower left part of the Parkway?

24 THE WITNESS: Okay.

25 THE COURT: And you had said -- I thought I heard you

1 say that if we were to look at a aerial photograph of the
2 Parkway that showed this location mapped right here --

3 THE WITNESS: Mm-hmm.

4 THE COURT: -- and what was before it, that the exit
5 to 198 would be before it?

6 THE WITNESS: Yes, it would be to the back left.

7 THE COURT: All right. So, towards the southwest,
8 right?

9 THE WITNESS: Yes, sir.

10 THE COURT: Okay. And as part of that exit, there is
11 an exit lane, right?

12 THE WITNESS: Yes, sir, there's a third lane.

13 THE COURT: So that you have two lanes going north and
14 then there's a, like a -- there's another travel lane that veers
15 off to the right to allow you to take the exit on to 198?

16 THE WITNESS: Yes, sir.

17 THE COURT: And that extra space and the at the grassy
18 part when it stops then disappears and beyond the exit to 198,
19 the road becomes depicted as it is here?

20 THE WITNESS: Yes. So it should be a representation
21 of north of that area.

22 THE COURT: From -- regardless of whether this is in
23 your report or not or regardless of whether you were intending
24 to testify to this or not, I just want to understand. Is it --
25 when you questioned the witness about what her statement was to

1 you, regardless of whether she was telling the truth or not, you
2 of course incorporated what she said into your analysis of the
3 crime scene, right?

4 THE WITNESS: Absolutely.

5 THE COURT: That would be standard process to do,
6 right?

7 THE WITNESS: As far as I know, yes.

8 THE COURT: All right. From what she said, was it --
9 was the beginning of the defendant's vehicle's attempt to pass
10 her when it was on the right-hand side, did it begin back where
11 that exit lane was on 198?

12 In other words, let's say, before you get to that exit
13 lane on 198, I'm trying to get ahead of a car in that lane. One
14 way I could have room to try to get over on the right would be
15 to try to start a pass and complete it before I lose that exit
16 lane.

17 THE WITNESS: Sure.

18 THE COURT: And I would speed up, presumably, and pass
19 wherever I was going around it. Based on what the witness said,
20 are you able to -- did you draw any conclusions in your
21 assessment of the crime scene as to where the defendant's car
22 began to try to pass on the right, if that's where the impact
23 happened?

24 THE WITNESS: So, from her written statement, it
25 wasn't clear exactly where it was. From where this scene is in

1 relation to where that exit lane is, this is probably a tenth to
2 two-tenths of a mile where that exit lane breaks off.

3 THE COURT: And so you have no ability to know where
4 exactly the attempt to pass started if there was one?

5 THE WITNESS: No, sir.

6 THE COURT: All right. I just wanted to understand
7 what the layout was.

8 Any further questions from you, Mr. Miller?

9 MR. MILLER: Your Honor, I have probably five recross
10 questions.

11 THE COURT: All right. And then we're done with that
12 and you can tell me if you want to have your witness testify.

13 MR. MILLER: Thank you, Your Honor.

14 THE COURT: Okay. Go ahead.

15 RE CROSS-EXAMINATION

16 BY MR. MILLER:

17 Q Sergeant Manning, good afternoon again.

18 Just to go over again some of the Court's questions, I want
19 to clarify between two things. Now, it is -- it is possible
20 that a vehicle that is in a Critical Speed Yaw won't leave
21 characteristic tire marks or, indeed, won't leave any tire
22 marks, correct?

23 A It is possible, yes.

24 Q But what's important for the analysis here is that you
25 can't use a tire mark for the CSY method unless you first

1 establish that it is a Critical Speed Yaw mark, correct?

2 A I suppose so, yes.

3 Q Just to clarify, did you personally interview the witness
4 or did another officer relay her statement to you?

5 A I spoke to her after she had already completed her written
6 statement to corroborate what she had said on the written
7 statement.

8 Q And did you have the written statement in hand or --

9 A I don't recall if I actually had it in hand or I read it
10 prior to, and then talked to her.

11 Q But you had seen her written statement before you spoke to
12 her?

13 A Yes.

14 Q Do you -- did you examine the -- did you examine the
15 vehicle itself following the accident when it was down in the
16 ditch?

17 A Yes, upon it being retrieved from the woods, it was towed
18 to our secured lot facility down on "V" Street Northeast. I
19 looked at it in there.

20 Q So, you examined it not sort of in situ, but you examined
21 it down on "V" Street, correct?

22 A I looked at it and made notes or documented what I saw in
23 the report. And then I went back and just give it a second once
24 over.

25 Q And do you recall if the rear bumper cover was present or

1 was absent at the time you examined the vehicle?

2 A At the lot, it was not present. I can't say for certain.
3 I don't think it was still attached to the vehicle when it came
4 to final rest.

5 Q And again, on the question of investigation you might have
6 undertaken to rule out the possibility of the collision with
7 another vehicle. If there had been a collision on the rear
8 bumper, the absence of the rear bumper cover would mean that
9 that particular piece of evidence, whether there was any marks
10 or indentation or paint transfer on the rear bumper cover, that
11 wasn't something you could determine based on what remained of
12 the vehicle, correct?

13 A Correct.

14 Q With regard to -- we were talking about the Daily text and
15 do you recall a portion where it says, "If the marks are too
16 short to attain two chords and middle ordinate measurements,
17 then the maneuver is not a Critical Speed Yaw." Do you recall
18 reading that?

19 A I do.

20 Q And do you also recall a portion which says that, "The
21 reason we give flexibility to choose the chord length is because
22 we should have, at least, a 6-inch middle ordinate." Do you
23 recall reading that?

24 A I'm sure I read it, but I can't recall specifically.

25 Q All right. And indeed, it says, "Any middle ordinate less

1 than six inches becomes too sensitive to its measurement. A
2 small error in measuring the middle ordinate can grow to a large
3 error in the radius determination." Correct?

4 A That's what it says, yes.

5 Q Just as we were discussing this with the government, the
6 reason why you're measuring a chord and the middle ordinate is
7 you're trying to compute the radius based on a formula, correct?

8 A Yes, there's certain variables that you need to complete
9 the formula.

10 Q And if I could just ask you to look at your report, which
11 is tab nine --

12 THE COURT: Of that notebook. Tab nine of the
13 notebook, sir.

14 MR. MILLER: Yes, of the defense exhibits.

15 BY MR. MILLER:

16 Q And if I could ask you to turn to the -- it's page 12 of 15
17 of the -- of your report itself?

18 A Okay.

19 Q And does that page, in fact, contain the, the formula which
20 you used to obtain the radius?

21 A It has the arithmetic worked out for the radius, which is
22 part to the component you need for the speed formula. And then
23 the speed formula listed below, but not the math.

24 Q Okay. And wherever we see a .17 in that formula, that is
25 the middle ordinate, but expressed in feet rather than inches,

1 correct?

2 A Yes, sir.

3 Q And it was your testimony before that you measured the
4 middle ordinate as two inches, but there are no more significant
5 figures. We don't know if that's to an eighth or 1.8. Just two
6 is the number you've come up with, correct?

7 A That's what I was able to get from the program, yes.

8 Q Okay. So if we now actually look at the very first line of
9 this formula, am I correct in seeing the first term within that
10 first parenthesis, in the denominator you have eight times .17;
11 is that correct?

12 A Yes.

13 Q So it's fair to say that any, any imprecision in that .17
14 is multiplied eight times in terms of making the denominator of
15 this term, correct?

16 A I suppose you can look at it that way, yes.

17 Q And then that denominator is then, is then used to compute
18 the first term of the formula in the first portion of actually
19 finding out what the radius is?

20 A Yes, it's all in the parenthesis there?

21 MR. MILLER: I have no further questions. Thank you.

22 THE COURT: Okay. May the sergeant step down?

23 MR. MILLER: Yes, Your Honor. Thank you.

24 THE COURT: Thanks a lot, sergeant. You can take
25 whatever materials you need back with you and return. He can

1 stay in the proceedings for the rest of the afternoon, can't he?

2 MR. MILLER: Certainly.

3 THE COURT: Terrific. Just have a seat and be
4 comfortable.

5 THE WITNESS: Am I excused or just --

6 THE COURT: Well, it's up to your -- check with the
7 United States Attorneys' office.

8 You don't anticipate calling him back, anybody
9 anticipate calling him back, is that right?

10 MS. WEISMAN: The government does not.

11 MR. MILLER: No.

12 THE WITNESS: I work at night, so I'd like to get a
13 nap.

14 THE COURT: Yeah, absolutely. Any problems with the
15 sergeant leaving so he can get a nap before his shift starts
16 tonight?

17 MR. MILLER: No objection.

18 THE COURT: All right. Thank you very much, sergeant.
19 Get some rest.

20 THE WITNESS: Thank you, sir. Appreciate it.

21 THE COURT: All right. What's your pleasure,
22 Mr. Miller?

23 MR. MILLER: Your Honor, we would certainly like to
24 call Mr. Cover if the Court has time for us to do so today.

25 THE COURT: I do. I'm here and, unfortunately, Linda

1 and Shante can say, I sometimes stay later than they would
2 rather have me stay. So, let's get it done. I rather do it
3 today and get all the testimony on the record so that we can
4 then see where that takes us.

5 MR. MILLER: Then defense would call Mr. Wendell
6 Cover.

7 THE COURT: Mr. Draughon.

8 MR. DRAUGHON: Your Honor, just a practical matter.
9 What would the cut-off be in case I need to tell my wife to pick
10 up my children.

11 THE COURT: Oh, here's what I would love to be able to
12 do. I'm not one hundred percent sure we'll be able to get it
13 done today. I would love to get the testimony done, all right.
14 Then I obviously need to let you have a chance to argue. And
15 then if I can, I'd like to rule.

16 But if -- I would not stay here later -- like, last
17 night we were in court until six. That's a very unusual
18 circumstance for me, but if we have -- it's 3:30. I'm assuming
19 it's going to be 4:30, maybe even five before we get the
20 testimony done, and argument and ruling will probably take more
21 than an hour.

22 I -- if we have the testimony done, I'm prepared to
23 say, let's come back on our second day and do the argument and
24 ruling, which I think probably would be fair because that way
25 you can get a transcript if you want a transcript and be able to

1 argue from that.

2 So I think right now, that's likely. So, for purposes
3 of your planning, I think that we can estimate that we should be
4 done here by five, 5:15 at the latest. So, if that helps you
5 decide what you need to do with regard to that important
6 function of picking up children, then by all means go ahead and
7 do that.

8 MR. DRAUGHON: Thank you. I appreciate that,
9 Your Honor.

10 THE COURT: Yes, sir.

11 All right, sir. Come on up. The seat is nice and
12 hot, just the way you like it.

13 Thanks so much, sergeant. Get some rest and thanks
14 for your service.

15 (Witness excused.)

16 WENDELL COVER, DEFENSE WITNESS, SWORN

17 THE DEPUTY CLERK: Thank you. Be seated and state
18 your name for the record, and please spell your last name.

19 THE WITNESS: Wendell R. Cover, C-O-V-E-R.

20 THE COURT: First name again, sir? I'm sorry.

21 THE WITNESS: Wendell.

22 THE COURT: Thank you, sir.

23 THE WITNESS: W-E-N-D-E-L-L.

24 MR. MILLER: Mr. Cover, at the Court's request, we're
25 doing a little bit of an abbreviated question about

1 qualifications.

2 THE COURT: Yeah, I've read your qualifications, I
3 read your CV, I've read your report, so we're going to jump
4 into --

5 Look, let's focus on what's key here. We're talking
6 about the appropriateness of using Critical Speed Yaw Formula
7 for calculating speed. It appears to me that there is evidence
8 that's been described. People can argue whether it shows a yaw
9 mark or a skid mark or whatever, but we're talking about the
10 appropriateness of the formulas on the screen with the variables
11 in that producing a result that would allow an accident
12 reconstructionist to express an opinion consistent with reliable
13 methodology reliably applied to the facts of the case using
14 methodology generally accepted as reliable by people in that
15 specialty to reach a conclusion on speed. That's the focus of
16 what I need to get my arms around.

17 MR. MILLER: Thank you, Your Honor.

18 DIRECT EXAMINATION

19 BY MR. MILLER:

20 Q So let me start directly with, could you explain your
21 understanding, what does the term -- what does the term Critical
22 Speed Yaw actually mean?

23 A Critical Speed Yaw is when a vehicle is in a steady state
24 lateral acceleration. The vehicle is not yet out of control.
25 And it's based on uniform circular motion, which you will find

1 in the first few pages of any physics book which states that the
2 acceleration is equal to the velocity squared divided by the
3 radius. And then when you combine that with Newton's second law
4 of motion where force is equal to mass times acceleration, you
5 combine the two and then you get the derivation to get the
6 formula that most police reconstructionist use.

7 In fact, you could use the simple, just acceleration,
8 velocity squared divided by radius formula.

9 THE COURT: A little slower here. I can see that this
10 is something that you spend a lot of time thinking about, but
11 our court reporter does not and she's got to get it all down.

12 THE WITNESS: Yes, sir.

13 And by using that, your answer will be in feet per
14 second and then you just have to convert it to miles per hour
15 most of us understand.

16 THE COURT: So, my understanding, Mr. Cover, is that
17 you don't quarrel with the formula being used for purposes of
18 the Critical Speed Yaw calculation that would allow you, if
19 properly done, to reach that conclusion on speed. It is the
20 variables plugged into it and how they were arrived at that is
21 your concern?

22 THE WITNESS: Yes.

23 BY MR. MILLER:

24 Q And to clarify even the Court's question, is it fair to say
25 that even antecedent to using the Critical Speed Yaw formula,

1 you need to determine that the vehicle was actually in a
2 Critical Speed Yaw?

3 A That's correct.

4 Q And can you explain what the difference is between a yaw
5 and a skid, for example?

6 A As with any field, terminology is very important. And
7 specifically in accident reconstruction, we have tire marks.
8 Tire marks can be broken down into two categories, friction and
9 tire prints.

10 I'll say prints first since it's real simple. It's just
11 what it sounds like when you have a tire that is rolling through
12 a soft material such as mud or snow, that's a tire print.

13 Friction marks can be broken down into what the most common
14 and unfortunately too many people see any tire mark and call it
15 a skid mark. A skid mark is caused by a locked, non-rotating
16 tire typically as a result of braking, but a tire can also be
17 locked due to damage from an impact. When that occurs, we often
18 refer that as a collision scrub.

19 THE COURT: Scrub?

20 THE WITNESS: Scrub.

21 THE COURT: Like S-C-R-U-B.

22 THE WITNESS: Yes.

23 Skid marks do have striations. However, the
24 striations are parallel with the outside edges of the tire mark.
25 That is the characteristics that helps you define that that tire

1 mark is a skid mark.

2 The other type are scuff marks. Scuff marks are
3 caused by a rotating and sliding tire. We typically referred to
4 them as a yaw mark. And what that just means is that the tire
5 is rotating and sliding. Evidence of that are striations within
6 the mark that are at an angle to the outside edges of the tire.

7 And there are other types of scuff marks. With the
8 invention of ABS brakes, since by definition the tire does not
9 lock, we had to come up with another term to define that
10 specific mark, ABS scuff mark.

11 The other which you referenced to is the spinning of
12 wheels. We call that an acceleration scuff mark. To
13 distinguish that from a skid mark, skid marks start light and
14 then end dark. Acceleration scuff marks start dark and end
15 light. So you're looking for those characteristics to define
16 that.

17 Yaw marks are curved, but not all YAW marks are
18 critical speed scuff mark, but a critical speed scuff mark by
19 definition is a yaw mark. And the onset of a critical speed
20 scuff mark is a very narrow dark mark about a inch wide. As the
21 vehicle progresses through a yaw, and by definition in
22 reconstruction, a yaw simply means that the headlamps are
23 pointing at one direction, but the center of mass is traveling
24 in a different direction. And the difference between the two is
25 what we call a slip angle, because everything that we do in

1 physics is based upon the distance that the center of mass
2 traveled when you're calculating speeds. So --

3 Go ahead.

4 BY MR. MILLER:

5 Q Well, I was going to move on and actually say, why don't we
6 look at some of the photographs from the scene. But let me ask
7 you if your finishing your answer will help explain to the Court
8 the different types of tire marks, please continue.

9 A I think I covered in a general sense, but there are and I'm
10 sure we'll get into as to specific -- just because you have a
11 curved yaw mark does not mean it is a critical speed scuff mark.
12 There are specific standards and guidelines that one must take
13 to confirm that the vehicle is in a steady state lateral
14 acceleration before it is proper to apply that methodology.

15 Q And you've been here in court, so I take it you heard the
16 testimony regarding to a bald tire?

17 A Yes.

18 Q Does the tread depth or the fact that a tire is bald, does
19 that have anything to do with the question of whether there will
20 be striations or not?

21 A Not at all. The striations are created by the shoulder of
22 the tire or if a vehicle is rotating enough, there's enough side
23 force where essentially the sidewall collapse and the sidewall
24 makes contact with the pavement producing those oblique
25 striations.

1 Q Previously while you were in court, we went through
2 exhibits -- I believe it was 2B through I, and these were
3 identified as photographs taken on the scene purportedly of the
4 path of vehicle. In connection with your examination, have you
5 reviewed those photographs?

6 A I have.

7 Q And additionally in connection with your examination, did
8 you review a video that was also taken on the scene?

9 A Yes.

10 Q In your review of those photographs and that video, did you
11 see anything that had the characteristic of a Critical Speed Yaw
12 mark?

13 A No.

14 Q Now, earlier we heard testimony about two specific images
15 and I'm going to call them -- call back up 2G if I can.

16 Let me ask you first the same question now looking at 2G.
17 Do you see anything in 2G that you would identify as a Critical
18 Speed Yaw mark?

19 A No.

20 Q Okay. And additionally, if I look at two --

21 THE COURT: Hold on. Before we leave 2G, so, Mr.
22 Cover, I get it that you don't see anything in that that
23 indicates Critical Speed YAW mark. Tell me what those hash --
24 those white striations are in the lower left corner in your
25 opinion.

1 THE WITNESS: That is a yaw mark. It's just not a
2 Critical Speed Yaw mark. And the white is when it picks up
3 loose surface materials, little tiny stones and as the vehicle
4 is rotating and sliding, that is creating those marks.

5 THE COURT: So, it's a yaw mark, but in your opinion,
6 not Critical Speed Yaw mark?

7 THE WITNESS: That's correct.

8 THE COURT: Got it.

9 BY MR. MILLER:

10 Q And looking to both 2G and 2H, we heard testimony from
11 Sergeant Manning that these are taken at the leftmost end of the
12 road surface. What if any significance does that have to you?

13 A As to the application of the critical speed analysis, it
14 has nothing. This is well beyond the point that the vehicle
15 has -- is out of control. And if you look at the full diagram
16 of the location and of the onset of what is reported to be the
17 first tire mark to where these marks occur, it is well beyond
18 and clearly out of control. And it is also beyond where
19 Sergeant Manning indicated he took his chord and middle ordinate
20 measurement.

21 Any vehicle that is in a Critical Speed Yaw, if it rotates
22 -- if there's enough real estate and as it begins or continues
23 to rotate will ultimately go into a spin and a side-wise slide.

24 THE COURT: So, hold on. I want to go back and unpack
25 that step by step to make sure I understand it.

1 So if I look at 2G, 2I, I see those yaw marks. You've
2 said they don't show evidence to support Critical Speed Yaw.
3 This is obvious -- you're saying that H and I, the car itself is
4 now out of control. Does --

5 For purposes of understanding speed at the most
6 important time for the Critical Speed Yaw calculation, do you
7 have to begin your measurements before you have to find the
8 presence of yaw marks before it goes out of control?

9 THE WITNESS: Yes. That is the steady state lateral
10 acceleration. And there are steps that you can take and are
11 taught to confirm that the vehicle is, in fact, in a steady
12 state lateral acceleration that fits the mathematical model.

13 THE COURT: Hold on one second.

14 "While in steady --

15 THE WITNESS: Steady state lateral acceleration.

16 THE COURT: -- lateral -- and when in steady state
17 lateral acceleration, the car is still in control?

18 THE WITNESS: Yes. And I have a model that may help
19 illustrate that.

20 THE COURT: Sure.

21 THE WITNESS: It's that when a vehicle is traveling
22 straight and we have rolling resistance on the tires, as the
23 vehicle begins to rotate and it's going to rotate about its
24 center of mass. So, in this case, we have evidence that the
25 vehicle rotated counter-clockwise.

1 THE COURT: So center of mass would be if I were to
2 look straight down on it and put a pin directly in the middle;
3 front, back, left, right, that's center of mass?

4 THE WITNESS: Well, by pure definitions, that point
5 that an object is perfectly balanced.

6 THE COURT: Okay.

7 THE WITNESS: So if it's a solid object, you know,
8 without, then it would be in the center. But in cars, the
9 center of mass is around the right hip of the driver. And it's
10 denoted on this model by these dots.

11 So, if you have your vertical axis, horizontal axis
12 and longitudinal axis, where all three of these intersect is the
13 center of mass. So when a vehicle is in a counter-clockwise
14 yaw, it's rotating about its vertical axis or what we refer to
15 as the Z axis.

16 When that takes place, we have another force, a
17 lateral force that's being applied to the tires. That force is
18 going to, by definition, begin to slow the vehicle. But once it
19 reached anywhere from 15 to 20 degrees, then all the testing and
20 the research has shown it's now in a spin and no longer in a
21 steady state lateral acceleration.

22 So that's the importance of a scale diagram. In
23 addition, the Daily reports that you measure the offtrack
24 between the front tire and the rear tire and that distance, the
25 ratio of that distance and the wheel base should not be greater

1 than .35.

2 Other techs will report that that distance should not
3 be greater than one half the track width. And that must be
4 consistent throughout the chord length, which hence the
5 importance of doing a scaled diagram. There are jigs you can do
6 if you -- you know, out on the scene, but it's not practical to
7 do it on scene.

8 I think I answered the question. I'm just
9 continuing -- trying to make it clear.

10 THE COURT: So once the car is not in a steady state
11 lateral acceleration, it is no longer in a critical yaw?

12 THE WITNESS: Correct. It is then in a spin.

13 BY MR. MILLER:

14 Q And if I might further break down your initial answer you
15 gave, even assuming that these were Critical Speed Yaw marks
16 which you have indicated they are not, they -- do I take your
17 answer to mean there is clearly not the tire marks that Sergeant
18 Manning used to plat his chord and middle ordinate to calculate
19 the radius; is that correct?

20 A Correct.

21 THE COURT: Stop right there, if you don't mind.
22 Sorry about that. I don't mean to be blunt, but I'm being
23 blunt.

24 So let me just make sure I get it. You have to talk
25 to me like I'm six years old, Mr. Cover. That's from

1 Philadelphia. I didn't make that up. That's from a famous
2 movie before your time.

3 You're telling me that for purposes of the
4 calculations done by Sergeant Manning in the chart that we just
5 had up on the screen, whatever these marks show about the
6 presence or absence of Critical Speed Yaw, they are entirely
7 irrelevant to the calculation because they are not the marks
8 used when he used that Total Station technology to make his
9 calculations?

10 THE WITNESS: I thought I heard a couple things.
11 Where he took the measurements for -- of the chord and middle
12 ordinate was not where these images that we've just talked about
13 of a yaw mark that was on the left side of the highway.

14 THE COURT: And --

15 THE WITNESS: He and the other officer, they mapped
16 what they believed to be some tire marks on scene, but if you're
17 going to use this methodology, the preferred is to measure on
18 scene to the leading outside tire, the outside edge -- and in
19 this case would be the right front tire -- and measure your
20 chord and middle ordinate on scene.

21 Sergeant Manning wrote that the marks weren't that
22 discernible, so he couldn't determine that. So, therefore,
23 platted it and was able to determine it on scene, which in of
24 itself and all due respect to him doesn't make sense. And when
25 you look at the distance of in between the points and in the CAD

1 program we call them nodes, which is just a point that's
2 connected by two lines. The standard and protocol, if you're
3 going to use that method, then you need to map every meter so
4 that every --

5 THE COURT: So, take a step back. If you don't have
6 marks on the road allowing you to find your chord and middle
7 ordinate when you have determined from evidence on the road that
8 there is Critical Speed Yaw marks that allow you to do your
9 chords and your middle ordinate to do the calculation, it is
10 acceptable methodology to not throw your hands up and say, I
11 guess we go home, but to use the platting device, but you got to
12 have it every meter. Is that what you're saying?

13 THE WITNESS: No.

14 THE COURT: Okay. I'm missing this.

15 THE WITNESS: You must have clear, identifiable,
16 critical speed scuff marks in order to properly measure and
17 reflect the true geometry of that tire mark.

18 The way a CAD program works, if you have several
19 different points and you draw a line between those points, the
20 CAD program is trying to mathematically make as smooth a curve
21 that you can so it passes through each one of those points. And
22 if the spacing is too far, that's not going to represent the
23 true geometry of the mark in the field. And if the true radius
24 is unknown, then the true radius that the center of mass [sic]
25 is unknown.

1 In the perfect world, the best method is to actually
2 orient the model throughout the sequence overlaying the tires of
3 a scaled model of the correct wheelbase and the correct track
4 width, and then measuring the radius through the center of mass.

5 It's a tedious and time consuming process. So what is
6 taught is a shortcut by after you calculate the radius is just
7 to subtract half the wheelbase because the center of mass is
8 about in the center line of the vehicle, and it just makes it
9 simpler and faster.

10 And the distances, and I have a graphic that
11 illustrates it, that I found in the area in which he determined
12 the radius was much greater than three feet.

13 BY MR. MILLER:

14 Q And, Mr. Cover, I think we'll come into more of the
15 specifics of those in a moment, but even just to get back to the
16 fundamental question, the -- if Sergeant Manning and Officer
17 Tomasiello were platting particular tire marks on the scene as
18 the basis for their chord and middle ordinate it's fair to say
19 they're not the ones we're seeing in these pictures at the left
20 side of the road, correct?

21 A Correct. For the critical speed analysis. And in fact,
22 the geometry of the CAD lines of which Sergeant Manning took his
23 chord and middle ordinate, if they measured to the outside edge
24 or a consistent part of a tire mark, then the CAD program is
25 going to reflect a continuous smooth arc when in fact it does

1 not.

2 The CAD lines in the area of which Sergeant Manning used
3 actually changed directions so that they are curved
4 counter-clockwise and then they curve clockwise. That to me
5 indicates either, one, it's not a critical speed scuff mark; or
6 two, that even if it was, it does not accurately represent the
7 radius is because, as his report indicates, we couldn't see a
8 clearly defined tire mark.

9 So when the officer with the rod, he's making his guess, so
10 to have this change of direction would suggest that sometimes
11 he's on the outside edge, sometimes he's on the inside edge or
12 the middle or somewhere in between, but not consistent to the
13 outside edge of the tire, which the standards, guidelines and
14 protocols require.

15 Q And, Mr. Cover, the actual points which are used to
16 calculate the chord and the middle ordinate, where on the road
17 surface are those right to left?

18 A They are in the -- based upon his cutout detail that's in
19 his report where he has the label and the leader pointing to the
20 approximate crossover point, that's in the right lane.

21 Q And if we look back at photographs 2A, 2B, 2C, 2D, would
22 you agree that those are all photographs of the right shoulder,
23 then the right lane through the center of the road?

24 A Yes.

25 Q And once again, looking at those photographs which you

1 indicate would indicate the location where the tire -- alleged
2 tire marks used to make the chord and middle ordinate, do you in
3 any of those photographs see anything that would qualify as a
4 Critical Speed Yaw mark that should have been used for this
5 purpose?

6 A No.

7 Q In the absence, as you've testified, of tire marks that you
8 would characterize as Critical Speed Yaw tire marks, what does
9 that tell you about whether or not the vehicle was in a Critical
10 Speed Yaw at all?

11 A It indicates that it was not. And then you take your --
12 and if you're unsure, then you take the steps as outlined in the
13 training material to orient a scaled model over your tire marks
14 and determine the off-tracking between the front and rear tires.
15 Divide that by the wheelbase and what is that ratio? And in
16 this case it yielded .39.

17 And Daily states that anything greater than .35 ratio, the
18 vehicle is in a spin. Other techs will say, it's half the
19 wheelbase. This vehicle has -- or the track width, the track
20 width is about 5 feet, 5.0 feet, so two and-a-half feet. At the
21 location where Sergeant Manning took these measurements, the
22 off-tracking is three and-a-half feet.

23 Q And based on the numbers that you've just quoted and the
24 two approaches in the literature, would it be more appropriate
25 to describe the maneuver that this vehicle was in, therefore, as

1 a spin or as a Critical Speed Yaw?

2 A As a spin.

3 Q Now, if you could turn to Exhibit 23?

4 THE COURT: So, let me take that to the logical
5 conclusion.

6 If it was in a spin and not a Critical Speed Yaw, then
7 it would have been appropriate to use the Critical Speed Yaw
8 formula to calculate speed?

9 THE WITNESS: Inappropriate.

10 THE COURT: Inappropriate?

11 THE WITNESS: Yes.

12 BY MR. MILLER:

13 Q And that's because the Critical Speed Yaw formula is not
14 the correct method of determining the speed of a vehicle that is
15 in a spin, correct?

16 A Correct.

17 Q Now, if we could turn to Exhibit 23. Could you describe
18 generally what Exhibit 23 is?

19 A This is a cutout detail from my CAD diagram. What I did
20 was the Park Police uses a proprietary program, which I do not
21 have, but it has the ability to export the data as a DXF, which
22 is a universal drawing exchange file. I had someone do that for
23 me and as a result, the key attributes were missing. And I have
24 a printout of what that result was.

25 So what I did was import his diagram to scale into my CAD

1 program. Then the -- and overlaid from the raw data the tire
2 line or the CAD lines that represent the tire marks on to that
3 diagram. And then I imported a scaled vehicle that's
4 represented by the red rectangle with the scaled position of the
5 tires and the wheel base, and overlaid them onto the tire marks.

6 And as I previously testified that the difference between
7 the direction the center of mass is traveling and where the
8 headlights are pointed is known as a slip angle. And that's
9 represented by the 26.2 degrees. And the literature says,
10 anything over 20 degrees, the vehicle is no longer in a Critical
11 Speed Yaw, but in a spin.

12 And then at the bottom of that model in green, you see the
13 3.52 feet is the distance between the offset of the left front
14 tire and the right front tire, which what I've just testified,
15 when you do the calculations, it exceeds the .35 ratio and is
16 greater than one half the track width of the vehicle.

17 THE COURT: That's the 3.52 number?

18 THE WITNESS: Yes, sir.

19 BY MR. MILLER:

20 Q And again, based on this analysis, is this consistent with
21 your earlier testimony that the vehicle was in a spin, rather
22 than Critical Speed Yaw?

23 A Yes.

24 Q And, therefore, is it consistent with your earlier
25 testimony that the Critical Speed Yaw method is not the way to

1 determine the speed of this vehicle?

2 A That's correct.

3 Q I'd like to turn more or return to the question of data
4 collection on the scene. Would you consider it to be -- we
5 heard testimony that Sergeant Manning was not present at the
6 time the actual photographs were taken. Is that consistent with
7 best practices?

8 A Not -- no, not unless that individual was an accident
9 reconstructionist. Certainly, a crime scene technician a lot of
10 times has more training and can be a better photographer, but
11 without the proper training or guidance, they may not know
12 what's important to document.

13 I don't have a problem with someone else taking pictures as
14 long as -- if it was my case, I want to be alongside that
15 photographer and say, make sure you capture this. They may have
16 more technical skills to make a better result, but I want to
17 direct them to make sure key evidence needed that supports any
18 opinions that I will render is documented.

19 Q And in terms of conducting on-scene measurements, we looked
20 before with Sergeant Manning at Exhibit Four, which showed a
21 generic scene of police officers measuring a chord and middle
22 ordinate. Is -- in your view, is it -- is the preferred method
23 to actually take the measurements on scene?

24 A Yes.

25 Q And why is that a better method?

1 A Because of -- it's fresh, the clearly defined edge and
2 because more so, the problem with mapping it through the Total
3 Station. If your points are not close enough, the CAD program
4 will not create an accurate, true geometry of that radius, which
5 is why, I'm sorry, which is why there are standards and
6 published papers. And there's a specific SAE standard that
7 addresses that protocol.

8 THE COURT: SAE means?

9 THE WITNESS: Society of Automotive Engineers.

10 BY MR. MILLER:

11 Q And then moving on to Exhibit Five, we identified this as
12 an exhibit from the Daily text showing two chords and two middle
13 ordinates being taken. Can you explain why it's important to
14 take two chords and two middle ordinants rather than simply one?

15 A To make sure that the vehicle is, in fact, slowing,
16 essentially. And in a Critical Speed Yaw, because of the side
17 force that I illustrated with my model that -- the vehicle will
18 be slowing. If the vehicle or your second chord results in a
19 higher speed, then that's should alert you of a problem.

20 And that reminds me, which I did not finish in my tire mark
21 definitions, the angle of the striations within a yaw mark will
22 tell you if it's free rolling, accelerating or braking, which is
23 another very important part of documenting and measuring the
24 angle of that striation to support that your CSY, Critical Speed
25 YAW analysis is appropriate.

1 Q So, in other words, if as a reconstructionist looking over
2 someone else's work after the fact, if you're presented with
3 only one chord rather than two, you don't have a basis of even
4 verifying that this -- that this was a Critical Speed Yaw,
5 correct?

6 A In of itself, if you apply the other techniques of
7 overlaying your scaled diagram or your model on your scaled
8 diagram to see what is the slip angle, that also may assist you.
9 But as Daily indicates in his text on page 441 at the bottom, he
10 specifically states that if you don't have enough room to do a
11 second chord, then you don't have a Critical Speed Yaw analysis
12 is because what he's essentially saying is the vehicle as
13 already progressed well into the rotation. And because if you
14 capture --

15 The literature indicates to take your first measurement as
16 close as you can at the initial crossover. And as the previous
17 exhibit shows, you see how close the rear tire and the front
18 tire are relative to each other. It's in the other exhibit, the
19 past.

20 THE COURT: Which exhibit?

21 MR. MILLER: When you indicated in the other exhibit

22 --

23 THE WITNESS: The previous one.

24 BY MR. MILLER:

25 Q The exhibit of the officers taking the measurements?

1 A Yes, yes. You see how close the two tires are to each
2 other.

3 Q And speaking of that measurement, why is it important --
4 well, would you indicate that it's important to have a middle
5 ordinate of sufficient lengths or a length greater than two
6 inches?

7 A Just because of sensitivity and of the measurement being in
8 the denominator and it's just map. So you want to be as precise
9 as possible in those measurements. And as Daily teaches, you
10 know, should be as close or your resolution should be to an
11 eighth of a inch.

12 And the sixth inch and I know there was testimony of the
13 case study in that chapter, but there's also a footnote at the
14 bottom of that case study that when he mentions the three and a
15 eighth chord in that case, he said this was prior to the new
16 criteria of the 6-inch minimum middle ordinate.

17 Q Now, in fact, what was done here rather than on the scene
18 measurement was the use of Total Station, as we've discussed,
19 correct?

20 A Yes.

21 Q And in terms of -- we've heard described that there's a
22 base station on a tripod and then there's a rod. And can you
23 explain again, what is the -- what is the rod? What is the
24 function of the rod? What is that accomplishing?

25 A The Total Station and I have one. I've had several and

1 I've had surveying classes. It's an electronic theodolite.
2 Total Station is just a term that was coined by Hewlett-Packard
3 in 1955 where they combined the theodolite with the data
4 collection device.

5 THE COURT: The what?

6 THE WITNESS: The data --

7 THE COURT: What light?

8 THE WITNESS: Theodolite.

9 THE COURT: Spell it.

10 THE WITNESS: T-H-E-O-D-L-I-T-E.

11 THE COURT: And what is the theodolite?

12 THE WITNESS: It's an electronic use. Prior to the
13 electronics, you would have the transits where the surveyor
14 would have these marks both for a horizontal and a vertical
15 angle that they would site through, make a mark and then do
16 chaining where they would actually measure with a steel tape.
17 And they refer to that as chaining to get that distance.

18 With the electronics, with lasers, Total Stations
19 measure in polar coordinates. So, what is does is measures --
20 once you set it up for a reference point as zero, then where
21 surveyors, when they set up, everything is referenced to some
22 known benchmark on earth. Where we don't care, you know, as
23 long as all the measurements are true to each other, you just
24 set up an arbitrary reference point where you can site all the
25 evidence that you want to collect.

1 And you have horizontal angles as you move the Total
2 Station and then the vertical angles. So what it actually
3 measures is a slope distance and then calculates the horizontal
4 distance.

5 And the rod person or a prism is a glass that reflects
6 back the laser and the type it takes to come back and it
7 calculates the distance. And then there's also devices which
8 mine is, you can use in reflector-less mode or prism mode where
9 you don't need a prism. So you just sight the laser, but you're
10 limited to a distance and how reflective the surface upon which
11 you are trying to measure too.

12 So a rod person in a reconstruction and I always found
13 this troubling that police do this, is the rod person is the
14 most important and the officer who is the lead reconstruction,
15 he is the one that should be the rod person because -- so that
16 he can testify that he put that rod over the piece of evidence
17 that he is relying upon in any opinions that he has rendered.
18 And it just seems like they do this in reverse, that the lead
19 person uses or is operating the Total Station.

20 In addition, that rod person should be communicating
21 back to the Total Station operator to label that evidence point
22 of what it is, because essentially, what a Total Station does is
23 just a very expensive dot-to-dot drawing. Just any child's
24 book, when you see these dots, when you import that into your
25 CAD program, that's all you have is all these dots.

1 And then you connect the dots based upon the
2 attributes that you have assigned for each one of those points,
3 and there are some programs that you can -- it can
4 automatically, if you have them coded properly, connect all like
5 points together, but -- hopefully, that answers your question.

6 BY MR. MILLER:

7 Q And to clarify, in placement of the rod on the tire mark,
8 is it important to be consistent or to, at least, be mindful of
9 whether one is putting it on the inside, the center or the
10 outside?

11 A As for this approach, it's absolutely essential because
12 otherwise you're not documenting any evidence to know the true
13 geometry, a/k/a radius that you can calculate, which is one of
14 the two unknowns in doing the formula. You just need to know
15 the radius and the lateral acceleration that you're applying.

16 Q So if we heard testimony earlier that it just wasn't known
17 or remembered or noted whether the rod was being placed on the
18 inside or the outside or the center, does that speak to the
19 accuracy of these measurements for the purpose for which they
20 were used?

21 A Yes. And I don't mean this disrespectful, but it shows a
22 lack of training, the proper training in the application of this
23 methodology. And I -- you know, I could tell you as a young
24 trooper 40 years ago, you know, I knew little and I have learned
25 a lot and I'm still learning, but I -- I'm embarrassed for him

1 that, you know, that he didn't receive this basic training that
2 has been in textbooks since the first J. Stannard Baker book, I
3 think, was 1945. And this is not new technology. I mean, this
4 is based upon uniform circular motion that's been in every
5 physics book ever since they've been printed.

6 Q If one is planning to determine the radius of a Critical
7 Speed Yaw using data collected with Total Station, what is the
8 recommended practice in terms of how far apart measurements
9 should be made along the tire marks?

10 A Every meter.

11 Q And a meter is about --

12 A 3.28 or .25 feet.

13 Q So from your own examination of the Total Station raw data,
14 how many points were measured along the tire marks by Sergeant
15 Manning in the area that he used to make this calculation?

16 A Two points for the right rear and three points for the
17 right front.

18 Q And how, how far apart approximately were those points?
19 And if you need to your -- to his report, of course, or to the
20 Total Station data?

21 A For the left front, just around 14 feet and 23 feet. And
22 for the right rear, little over 28 feet.

23 Q And can you indicate which exhibit you're referring to for
24 that?

25 A Twenty.

1 Q Okay. So, that's Defense Exhibit 20.

2 And can you, in fact, if you -- can you describe generally
3 what Exhibit 20 is?

4 A This is what we call a cutout detail from the CAD diagram.
5 And it represents the area that Sergeant Manning had that cutout
6 detail in his report with the label -- approximate crossover
7 point with a leader pointing to one of the models.

8 Q And if you can refer back to Defense Exhibit 16, if you can
9 just compare the two exhibits and describe how they relate to
10 one another?

11 Sorry, Defense 13?

12 A So by -- this is the snapshot. And as I testified, I
13 imported his PDF diagram into my CAD diagram from the Total
14 Station raw data and overlaid the lines and the other attributes
15 from his diagram to position and determined the location that is
16 represented in Exhibit 20.

17 Q And you -- you've described now an industry standard of
18 about a meter or 3.2 feet apart and a distance, actually,
19 measured of 14 feet, 23 feet, 28 feet. Would it be fair to say
20 that the spacing between the platted points is -- substantially
21 exceeds the recommended practice in the industry?

22 A Yes. And, therefore, would not because of the -- how CAD
23 programs work, would not fairly -- would not represent the true
24 geometry of the tire mark.

25 And in fact, I have other cutouts that actually show that

1 the lines which should be a continuous counter-clockwise arc
2 actually changed directions.

3 Q So, if I could then turn your attention to Exhibit 16 and
4 I'm going to go through Exhibit 16 through 19. So if you could
5 describe, generally speaking, what Exhibits 16 through 19 are?

6 A Sixteen is the -- some of them are similar. Let me get my
7 --

8 Q I think it should be the white binder up there?

9 THE COURT: Mr. Cover, I think he's referring to the
10 white binder in front of you. Now, you may have other exhibits
11 that you may want to check them against.

12 THE WITNESS: I have an exhibit list that I created
13 with -- to describe.

14 MR. MILLER: Certainly.

15 THE WITNESS: This is a snapshot that shows a change
16 in direction. The red line represents the tire mark that -- or
17 the line that is reported to be from a tire mark from the scene.
18 The green line is what a straight line that I drew between two
19 points on that line. And if a vehicle is in a counter-clockwise
20 yaw, then that chord would be on the left side of the red line,
21 not on the right side. So, that portion of the tire mark is
22 actually curved clockwise.

23 BY MR. MILLER:

24 Q And then moving on to Exhibit 17, can you describe what
25 that is?

1 A Seventeen, if you look at the bottom line, we have an
2 overlay of the green line and the red line. At this resolution,
3 it may be hard to see, but there's a crossover. Initially, the
4 green line is on the left side of the red line. Then up at the
5 top, the green line is on the right side of the red line. So it
6 actually crosses over.

7 So that is showing basic geometry that initially this
8 portion, the line representing the tire mark is curved to the
9 left, but then it curves to the right.

10 Q And then moving on to Exhibit 18, can you describe what
11 Exhibit 18 is?

12 A Can you zoom out a little bit for my number.

13 This is another example of changing direction. This time
14 up at the left front or right front tire mark where the green
15 line starts on the left side and then progresses to the right
16 side of the red line. Again, showing a change in direction of a
17 line that is reported to be from the Nissan in a Critical Speed
18 YAW, which is impossible.

19 Q And then Exhibit 19, again, could you describe what Exhibit
20 19 is?

21 A This is just another example along that line of the right
22 front tire mark at the top left of the page is arced in a
23 opposite direction.

24 Q So, collectively, the exhibits that we've just gone
25 through; 16, 17, 18, 19, what is it that you observed and as

1 indicated here about the CAD lines representing the tire marks
2 in general terms based on your analysis of these exhibits?

3 A That they do not represent a vehicle that was in a Critical
4 Speed Yaw. And if that vehicle was not in a Critical Speed Yaw,
5 then it would be improper to determine the radius using a chord
6 and middle ordinate from these lines, and then use the Critical
7 Speed Yaw analysis.

8 Q And from looking at officer or Sergeant Manning's report or
9 his data, can you tell when he was platting these tire marks if
10 he was doing it based on the inner, middle or outer edge of the
11 tire mark?

12 A No, it's not mentioned in the report, nor is it mentioned
13 if he used the right front or the right rear.

14 Q And why does that matter?

15 A Because the standard and protocol is to measure to the
16 outside of the -- the outside edge of the leading outside tire.
17 And in this case, that would be the right front tire.

18 Q Now, going back to the question of how a chord is measured,
19 a first chord and a second chord, where does the literature
20 suggest that the first chord should be measured from?

21 A From as close as possible to the initial crossover.

22 Q Okay. And if we can look again at Defense 13. So, if one
23 assumes that the tire marks here are properly mapped, is the
24 point that is identified on this chart as the approximate
25 crossover point, is that accurate?

1 A It is not.

2 Q Where would --

3 A It is a crossover point, but not the initial.

4 Q And where would the initial crossover point have occurred?

5 A The diagram as drawn by Sergeant Manning is at the initial
6 part or the initial tire mark. The first scaled model within
7 his diagram shows the vehicle angled to the left with the right
8 rear on the first mark that's produced. But in a Critical Speed
9 Yaw, the heaviest weight and therefore the greatest friction is
10 on the leading outside tire. So the first tire mark you would
11 expect to have been produced would be the right front tire.

12 Q And so, was there anything that stood out to you about what
13 Officer Manning concluded about which tire created the mark?

14 A As to the initial one?

15 Q Correct.

16 A Well, what I just said, that if in fact the right rear was
17 the first one that produced a mark should give indication, maybe
18 this vehicle is not in a Critical Speed Yaw. Maybe the vehicle
19 is braking and the dissimilar friction allowed one tire to begin
20 braking before the other.

21 Q And with all respect to Sergeant Manning, does -- what does
22 that say to you about his understanding of Critical Speed Yaw
23 terminology and measurements?

24 A Unfortunately, you know, that's hard to answer. And all
25 respect to him, that's just too many get -- plug and jug

1 training, and not to fully understand the science upon which
2 they are doing these calculations. And therefore, if you do not
3 understand the fundamental science, then you cannot recognize
4 when it's inappropriate to use a particular methodology.

5 Q I want to move on to the, kind of the third part of this
6 which I think we've discussed as being the friction or the drag
7 level on the road. Is -- first of all, why is that a necessary
8 aspect of CSY analysis?

9 A It's one of the variables. You need to know the friction.
10 It's -- to determine the speed.

11 Q And what are some of the methods that a accident
12 reconstructionist can use to come up with those values?

13 A The recommended practice is to actually do skid testing.
14 We did that in the 80's with a, a -- a gun marker where we know
15 exactly where you began braking. But now with technology, makes
16 it a lot easier to use an accelerometer.

17 Sergeant Manning mentioned one company, Vericom, which is
18 one of the early ones in our industry. However, today with
19 technology, you can get them on your app on your phone and you
20 just mount it on the car and you can do skid testings that will
21 measure the G-forces, simple as that. Some you have to pay for,
22 some are free. But absent that, because sometimes it's, you
23 know, it's not conducive to actually do that, then report a
24 range of values.

25 There's one paper that has reported the -- all the

1 literature to-date of when this particular author wrote the
2 report and found that the range of friction from all this
3 testing and on an asphalt surface, the average was .76 plus or
4 minus. I think it's .06.

5 So the 95th percentile of all the data ranged from, I think
6 it was .66 or .64 to .88. And the .9 or the 95th percentile is
7 important in what you are taught to use for criminal cases
8 versus a civil case where the -- you know, the more likely than
9 not standard.

10 Q So, said another way, if you're going to use table values,
11 is what you just described the width of the range you should be
12 using?

13 A Yes.

14 Q And is the range -- is the width of the range that Sergeant
15 Manning used here, was that an appropriate width to use?

16 A It is within the range of the range that I talked about,
17 but it does not include the lower end of the range.

18 Q So, said another way, was his range too narrowed to comply
19 with industry standard for this type of analysis?

20 A Yes, and there was nothing citing any reference that
21 supported that range.

22 Q So, in other words, as an expert reconstructionist again
23 coming behind and evaluating another reconstructionist work, is
24 it fair to say you want to know the basis as to why the first
25 reconstructionist chose the range that he or she chose, correct?

1 A Yes.

2 Q And in his report, you can't tell what that range was?

3 A No.

4 Q Or the basis?

5 A Correct, the basis. He did report the range.

6 Q And based on his testimony today, could you come up with a
7 principled reason why he chose that --

8 A No.

9 Q Let me ask you this: How could the presence of loose
10 surface material affect the accuracy of the particular friction
11 range that Sergeant Manning chose?

12 A Well, with any loose surface material, it's going to reduce
13 the available friction between the tire and the pavement. So
14 therefore, that value would be less. And the coefficient
15 friction by definition is the interface between two objects on a
16 level surface. And when you take in consideration grade or
17 braking percentages, then we refer to it as a drag factor.

18 Q And we spoke a moment ago about there being a basis for the
19 range chosen. Is the presence of loose surface one such basis
20 you would like to know if that was the reason a particular range
21 was chosen?

22 A Sure.

23 Q Now, speaking of loose surface, if it turns out that there
24 is an imbalance between the friction levels on the left side of
25 the vehicle and the right side of the vehicle because they are

1 on different types of road surface, first, is that a situation
2 that can happen?

3 A Yes.

4 Q And under what circumstances could that happen?

5 A Well, when there's imbalance and if a vehicle begins to
6 brake or steer, any time, basic physics, if you have an
7 unbalanced force, then you're going to have a change in
8 direction. And if that unbalanced force is relative or
9 eccentric, not passing through the center of mass, that's going
10 to produce rotation. So it must be considered, which is why the
11 standard protocol says that if at the time of loss of control a
12 vehicle is on an unbalanced surface, then it's inappropriate to
13 use the Critical Speed Yaw analysis.

14 Q And so, again, coming behind as a second expert looking at
15 this, if you're not told that is was considered whether there
16 was an imbalance between the right side and left side of the
17 vehicle, you don't even have a way of verifying that it was
18 appropriate to use the critical speed analysis. Is that
19 accurate?

20 A I thought I heard two things. If it's unbalanced or two
21 different surfaces at the time it lost control, then it's
22 improper to use it.

23 Q There was some testimony before or a question about
24 something called the energy loss method.

25 A Yes.

1 Q Can you explain what that is?

2 A The most common formula that police reconstruction will
3 refer to is the slide to stop or it's also sometimes referred to
4 as the basic speed equation.

5 THE COURT: A what?

6 THE WITNESS: Basic speed equation. That's what you
7 will hear them say, the speed is equal to the square root of the
8 product of 30 times the distance, times the friction. And that
9 also comes from forces equal to mass times acceleration in
10 kinetic energy where one half times mass times velocity squared,
11 when you combine the two --

12 COURT REPORTER: Excuse me?

13 THE WITNESS: Kinetic energy which is equal to one
14 half times mass times velocity squared. And when you combine
15 the two and just do your algebraic manipulations and
16 substitution of values, then you get the -- $30 VF$ is also
17 sometimes a term used within the industry. So that is an energy
18 dissipation equation.

19 So the alternative method when a vehicle is in a spin
20 is referred to as a spin analysis where you take into
21 consideration the slip angle throughout the entire sequence and
22 you break it up into intervals. And then you apply the basic
23 speed calculation to determine an equivalent speed loss for the
24 distance in which you are evaluating.

25 Q And would that be an alternative or additional method of

1 attempting to calculate the speed of a vehicle in a situation
2 like the one presented here?

3 A Yes.

4 Q And if a person -- if an reconstructionist had correctly
5 and accurately applied the Critical Speed Yaw method, would it
6 still be a reasonable approach to verify or, in other words,
7 check out the result by using the energy loss method?

8 A Yes. I mean, it's written in the teachings that the
9 Critical Speed Yaw Analysis is not intended to be a stand-alone
10 approach. Unfortunately, it often occurs because it's pretty
11 simple. It's an eighth grade formula. It's very simple to
12 calculate. But to do the spin analysis is not hard, but it's
13 very tedious to break it down in each interval. And without
14 creating a spreadsheet or having a computer program, it's just
15 time consuming to calculate each one and then do the sum of the
16 squares to get the initial equivalent speed loss.

17 Q So, Mr. Cover, let's -- in summary here, based on your
18 review of the data, the calculations provided by Officer
19 Manning, do you believe that Sergeant Manning's conclusion about
20 vehicle speed in this case using the CSY formula is reliable?

21 A It is not and it is totally inappropriate.

22 Q And so, should the finder of fact or should the Court or
23 should any of us take any confidence in a speed estimate that
24 was calculated in Sergeant Manning's report?

25 MS. WEISMAN: Objection.

1 THE COURT: Overruled.

2 THE WITNESS: No.

3 BY MR. MILLER:

4 Q And finally, was the use of the Critical Speed Yaw Formula
5 appropriate here?

6 A No.

7 MR. MILLER: No further questions.

8 THE COURT: All right. Let's take a quick break.

9 Sir, you may want to get -- I want to finish testimony
10 today and then we'll talk about when we have argument. But for
11 purposes of your child care, touch bases with Ms. Weisman and
12 get a sense of how long you think her cross might be, and add a
13 factor in there for any redirect so that you know whether you or
14 your wife should be the one to get the kids, all right.

15 MR. DRAUGHON: Okay. Thank you, Your Honor.

16 THE COURT: Let's take a break and come back here at
17 five minutes to five.

18 (Brief recess.)

19 CROSS-EXAMINATION

20 BY MS. WEISMAN:

21 Q Good evening, Mr. Cover.

22 A Good evening.

23 Q When a car is in a yaw, can you brake?

24 A Yes.

25 Q The brakes will work?

1 A Yes.

2 Q Even though the car is going sideways?

3 A A car -- it's not necessarily sideways when it's in a yaw.

4 Q A yaw is not a rotation?

5 A No. As I testified, yaw in of itself comes from aviation,
6 but your -- in reconstruction the headlights are pointed in one
7 direction, but the center of mass is traveling in a different
8 direction.

9 MS. WEISMAN: If I may, Your Honor?

10 THE COURT: Yes.

11 BY MS. WEISMAN:

12 Q So the headlights are pointing toward the reporter?

13 A Yes.

14 Q And the car is going in what direction?

15 A Well, it depends. A yaw just means that -- so in this case
16 we have a counter-clockwise yaw. So the vehicle is rotating
17 counter-clockwise about its vertical axis while translating --

18 There's two types of motions in physics; rotation and
19 translation. Translation is just movement from A to B. So when
20 a vehicle is in a yaw, it is rotating and translating. So as
21 the vehicle rotates counter-clockwise, and even you can see how
22 this model --

23 You're not close enough, but if you were you can see the
24 tires are --

25 THE COURT: I don't mind moving.

1 THE WITNESS: -- your tires are rotating.

2 THE COURT: So let's do this.

3 THE WITNESS: There's enough friction between this
4 model and this to illustrate that.

5 THE COURT: Do we have a lavalier?

6 (Pause.)

7 THE COURT: All right. Sir, put this on. Let's go
8 over here and I want a flat surface so I can see this. Just
9 stay where you are. I want to be able to -- you got one foot of
10 safe surface over here.

11 And then Ms. Weisman, you can speak into that one
12 right there and the court reporter can hear you.

13 MS. WEISMAN: Thank you, Your Honor.

14 THE COURT: You may want to --

15 THE WITNESS: So, you see how the tires are rotating,
16 but the center of mass is moving in this direction. So as the
17 tires are rotating, the outside edges or the shoulder of the
18 tire is scrubbing on the pavement that gives those oblique
19 striations that are classic in a yaw mark.

20 So, as the vehicle is going straight and as it's
21 (indicating). And I used to have something in my trial bag to
22 illustrate that with carbon paper, but -- so if we had some
23 carbon paper, you would see these oblique striations being
24 created. That's exactly what takes place in the real world.

25 THE COURT: So the lights are going this way and the

1 car is going this way?

2 THE WITNESS: The center of mass, right. And it's
3 crucial, I hate to keep saying, but everything in physics is --
4 cause this is assuming point mass object, meaning that this one
5 dot, what we're referring to is the center of mass.

6 THE COURT: So, and the brakes means that you can be
7 slowing it down, but you're still sliding?

8 THE WITNESS: Correct.

9 THE COURT: So you can still brake and still be in the
10 yaw?

11 THE WITNESS: And you can also be accelerating and be
12 in the yaw. Hence, the standard to document the angle of the
13 striations within the yaw mark so that you can opine what the
14 vehicle and driver is doing.

15 THE COURT: So if you come into a turn too fast and
16 you're going too fast steering the car, you can be accelerating
17 and slide that way?

18 THE WITNESS: Right, going into a yaw. So when you
19 exceed the critical speed of the curve because -- with a given
20 radius, you can only go so fast. If the lateral acceleration
21 exceeds the frictional force between the tire and pavement,
22 you're going to go back to Newton's first law which states that
23 every object at rest, including cars out on the road here will
24 remain at rest unless acted upon some outside force. It also
25 says, an object will travel in a straight line until acted upon

1 some outside force.

2 So what allows someone to make a turn is that lateral
3 force from the tires. But if it exceeds, then Newton's law
4 would say, I want to go straight. And once that is broken, then
5 you're going to travel tangent to the radius at that point that
6 begins to exceed the critical speed of that given radius.

7 THE COURT: Okay. So, can we go back to sit down?
8 Are we done with that demonstration?

9 MS. WEISMAN: Yes, Your Honor. Thank you, Your Honor.

10 BY MS. WEISMAN:

11 Q So, Mr. Cover, when you put your brakes on, it stops the
12 tires or at least slows them, right?

13 A Retards them. So the only -- and you can't unless there is
14 a defect with ABS brakes, you can't lock the tires or if you
15 remove the fuse from the vehicle.

16 Q So, retard is another word for slow, right?

17 A Yes.

18 Q And when the car is not going the direction of the tires,
19 you're saying braking still will slow down the car?

20 A Absolutely, but that -- the tires is the interface between
21 that vehicle and the pavement. So then you are combining --
22 there's a -- it's known as a friction circle. You only have so
23 much friction between the tire and the pavement. So then if
24 you're in a turn, a portion of that is a lateral acceleration.
25 Another portion is longitudinal. So, you can only -- you know,

1 if 100 percent -- you know, you can't exceed the sum of the two
2 more than a hundred percent.

3 Q And so, you're also saying that when you're in a yaw, you
4 can steer the vehicle?

5 A Yes.

6 Q And the car is in control even when it's in a yaw?

7 A Not necessarily. If it's in a Critical Speed Yaw, yes, but
8 --

9 THE COURT: Yes what?

10 THE WITNESS: That it's not out of control.

11 THE COURT: Okay.

12 THE WITNESS: But in a -- just like I said before,
13 they're different. I mean, a yaw mark or a critical speed scuff
14 mark is a yaw mark, but all yaw marks are not critical speed
15 scuff marks.

16 BY MS. WEISMAN:

17 Q Now, you indicated all yaws turn into either a spin or a
18 slide?

19 A If there's enough real estate. If there's not an impact
20 prior to that and if the speed is great enough that it will go
21 into a spin.

22 Q And you were able to determine the crossover point on
23 your -- from the exhibits that you submitted to the defense?

24 A Well, based upon the diagram by Sergeant Manning, that
25 occurred at the onset of the first mark he applied, but you

1 cannot determine that with a single mark. So, it's not until
2 further along that mark did he then pick up a second mark.

3 Q And Exhibit Number 13, I think it is, Exhibit Number 13
4 uses the word "approximate crossover point".

5 A Yes.

6 Q It doesn't say, first crossover point, does it?

7 A It does not.

8 Q It could be other crossover points?

9 A Well, clearly from the diagram, there were.

10 Q And you indicated that from spin analysis you can determine
11 the speed?

12 A Yes.

13 Q And what was the speed of this vehicle?

14 A I don't know.

15 Q You didn't figure it out?

16 A No. One, I wasn't asked to. Second, it would not
17 represent the initial speed because after the -- the spin in the
18 pavement, it traveled off the road and it's full dynamics or the
19 evidence to determine the full dynamics throughout that sequence
20 was not documented.

21 Q So, no one asked you to figure out the speed of this
22 particular vehicle?

23 A No.

24 Q But you could do it, couldn't you?

25 A No, for the reasons I just stated and as my report states,

1 that the -- all of the evidence necessary to calculate the
2 speed, at least a meaningful speed. You could calculate an
3 equivalent speed loss during the rotation on the road itself,
4 but that would not capture the energy that was dissipated once
5 it left the road to final rest.

6 Q You prepared a report in this case, did you not?

7 A Yes.

8 Q And you gave it to defense counsel?

9 A Yes.

10 Q And you're familiar with that report?

11 A I wrote it, yes.

12 Q And in that report, you wrote, "For unknown reasons, the
13 Nissan went into a counter-clockwise yaw, lost control and
14 entered the wooded median," right?

15 A Yes.

16 Q And then you wrote, "After entering the median, the Nissan
17 subsequently rolled off and ultimately came to rest on its right
18 side with its roof against a tree facing north," right?

19 A Yes.

20 Q And you wrote, "Before and during the rollover, the Nissan
21 struck several trees," right?

22 A Yes.

23 Q What do you base that on?

24 A The photographs of the -- taken at scene and also my direct
25 examination of the Nissan.

1 Q And you had a section of your report called, conclusions,
2 didn't you?

3 A Yes.

4 Q And in that you wrote, "The Nissan was traveling northbound
5 on the Baltimore-Washington Parkway when he went into a
6 counter-clockwise yaw and lost controlled, entered the median
7 and subsequently rolled over." You wrote that, didn't you?

8 A Yes.

9 Q Where in your report does it talk about a spin?

10 A A vehicle that is in a yaw that is not a Critical Speed Yaw
11 is in a spin. It's just another term that is used.

12 Q But there's not -- nothing in your report that indicates
13 that you determined there was a spin. You don't use that word,
14 do you?

15 A I -- in the critique part of the spin analysis, I'd have to
16 see if I used that.

17 Yes, I did. On page 14, number 12, next to the last
18 sentence, "Therefore, this evidents the vehicle was no longer in
19 a steady state lateral acceleration, but in a spin."

20 THE COURT: Which page?

21 THE WITNESS: Fourteen, sir, number 12.

22 THE COURT: Page 14, number 12.

23 THE WITNESS: Yes, sir, next to the last sentence.

24 BY MS. WEISMAN:

25 Q And then you wrote, "Therefore, it's improper to use the

1 Critical Speed Yaw Formula in calculating the speed of the
2 Nissan."

3 A Yes.

4 Q But you didn't write, but you can use a spin analysis when
5 a vehicle is in a spin?

6 A That was not the purpose of that particular paragraph.

7 Q The purpose was simply to criticize the police officer,
8 right?

9 A Not to criticize, but I was asked to evaluate the police
10 investigation and whether or not that methodology was correct.

11 Q And let's go to these green lines that you testified about
12 in Defense Exhibits 17, 18 and 19. I'm going to show you
13 exhibit -- well, Exhibit 16.

14 Now, your testimony about the red lines were lines that
15 were determined by Sergeant Manning?

16 A Yes.

17 Q And then you drew green lines on there?

18 A Yes.

19 THE COURT: I'm sorry, I didn't hear the last part of
20 what you said, Ms. Weisman.

21 MS. WEISMAN: You drew green lines on there, and he
22 said, yes.

23 THE COURT: So red is Manning and green is him.

24 BY MS. WEISMAN:

25 Q And exhibit number -- I'm sorry, Defense Exhibit Number

1 Four, that's a picture from John Daily's book?

2 A Yes.

3 Q And when was that book published?

4 A Early 2000 to the best of my memory.

5 THE COURT: I'm sorry, early?

6 THE WITNESS: Early 2000 to the best of my memory.

7 BY MS. WEISMAN:

8 Q And in that book, he did use a chord that was three and
9 one-eighth inches, right?

10 A He gave a case study of a scenario that he did and there
11 was a footnote on that page where he states that --

12 So, he's essentially -- I've known -- I know John
13 personally, that when you write a text book you try to dig from
14 your archives, some case you've done to give an illustration of
15 the point that you're trying to teach. And so he apparently
16 thought that was a good illustration, but he also thought it was
17 urgent enough to put a footnote that this case was done prior to
18 the standard of a 6-inch middle ordinate.

19 Q So he's trying to teach best practices, right?

20 A Yes.

21 Q And in Defense Exhibit Number Four, that's a photograph of
22 three separate police officers engaging in measuring a yaw mark?

23 A It is a yaw mark, but it's also a critical speed scuff mark
24 based upon the characteristics. And you can see that it is
25 right at the point of crossover, because you can see how close

1 the rear tire is to the front tire.

2 Q And these police officers are -- doesn't look like a
3 roadway. A pavement parking lot or something like that?

4 A It's probably a parking lot. That's how we train
5 individuals. You go out and actually skid cars and produce the
6 evidence that you are trying to teach so that any officer has
7 on-hands training in the measuring techniques or whatever
8 technique that you're being taught.

9 Q And there are no cars in this, no traffic passing by in
10 this picture, are there?

11 A No.

12 Q And there are three separate police officers engaged in the
13 measurement?

14 A Yes.

15 Q And it's nice and sunny and dry out, isn't it?

16 A I mean, it looks dry. I can't really say if it's sunny,
17 but it's daylight. I would say daylight, because I can't see
18 the sky.

19 Q And that's not -- you were a police officer at one time,
20 right?

21 A Yes, I was.

22 Q And that's not the way the real world works when there are
23 crashes, does it?

24 A I disagree with that. Especially with police, they have
25 the authority to shut the road down and in fact, use three

1 people. Or in my day, when I was excited about this in the
2 early or the late 70s and early 80s, I rigged up and I still
3 have it a lead weight so that I would be able to take this
4 measurement by myself. Or you take a masonry nail and hammer it
5 into the pavement, pull your tape and then twist it around the
6 other nail so that you can go out and measure the middle
7 ordinate. I've done it hundreds of time.

8 Q And you shut down 95 for that? When you were a state
9 trooper, you would shut down --

10 A Well, the road is already shut down because you are
11 investigating the crash. And I didn't just --

12 Q The tire marks are left there because little bits of rubber
13 separates from the tire and end up on the pavement, right?

14 A That is one possible way. Also, depending upon the nature
15 of the -- and the temperature, you can also -- the friction will
16 actually melt the asphalt. So sometimes it can be a combination
17 of both, but most often it's a transfer of the rubber onto the
18 aggregate.

19 Q And the tire marks are pretty ephemeral? They can blow
20 away in the wind, right?

21 A These type, no. You have the initial, what we call,
22 impending lockup when the marks are very light, before enough
23 friction is produced to leave a more permanent -- I wouldn't say
24 permanent, but a more long lasting mark. But these types of
25 marks as presented there would be there for a good period of

1 time.

2 Q Well, what's a good period of time?

3 A Well, if it's a parking lot, as you suggested, I would say
4 a month or more.

5 Q And if it's the Baltimore-Washington Parkway, it might be
6 half an hour, right?

7 A No, it would be longer than half an hour. And also
8 depending upon its lateral position within the travel lane. So
9 if it's directly over top of the tire paths, they're going to
10 wear sooner than in the center.

11 But I had found tire marks year later, especially if it's
12 on the edge line which is also something which was kind of odd
13 in this case is we see things by contrast. So a dark mark on a
14 dark pavement is not that clear, but when it crosses yellow
15 lines or edge lines, that contrast stands out. And a lot of
16 times, that is where I take my picture of the evidence of the
17 striation. You don't see that in any of these scene pictures.

18 Q And in this case, you did hear Sergeant Manning testify
19 that the yaw marks began in the right lane and then continued
20 over into the left, and then furrows appear in the median,
21 right?

22 A Actually, I thought he said it began in the right shoulder.

23 THE COURT: I'm sorry. I didn't hear that.

24 THE WITNESS: I thought he testified and at least the
25 report indicates it occurred initial on the right shoulder.

1 BY MS. WEISMAN:

2 Q And then went into the right lane?

3 A Yes.

4 Q And then went into the left lane?

5 A Yes.

6 Q Of the Baltimore-Washington Parkway?

7 A Yes.

8 Q And you're aware that the Baltimore-Washington Parkway has
9 tens of thousands of vehicles going across it probably every few
10 hours?

11 A I don't know the traffic count, but there's a lot of
12 traffic. I drive it often.

13 Q And are you saying that there wasn't -- based on the video
14 and the photographs and the evidence that you've heard, you did
15 not see a single critical speed mark?

16 A That's correct. And even if --

17 THE COURT: Did not see a Critical Speed Yaw mark?

18 THE WITNESS: Correct.

19 THE COURT: Scuff.

20 THE WITNESS: Scuff.

21 MS. WEISMAN: I have nothing further, Your Honor.

22 THE COURT: Redirect then.

23 MR. MILLER: Just very briefly.

24 REDIRECT EXAMINATION

25 BY MR. MILLER:

1 Q There was a discussion on Defense Exhibit 13. There was a
2 discussion about the approximate crossover point as indicated in
3 this diagram. And I would -- versus the first crossover point.
4 Do you recall that discussion?

5 A Yes.

6 Q And what is the significance of the first crossover point?

7 A That is the point at which you should be taking your chord
8 and middle ordinate measurement for the proper application of
9 Critical Speed Yaw Analysis.

10 Q And so, if the approximate crossover point indicated in
11 this portion of Sergeant Manning's diagram isn't the first
12 crossover point, this is not the place he should have taken the
13 first chord from, correct?

14 A Correct. And that's if, in fact, it was a Critical Speed
15 Yaw scuff mark. And his own diagram shows -- every one of his
16 models inserted into his diagram shows the rear tracking outside
17 the front.

18 Q So, based on this, would it be fair to characterize your
19 answer and, perhaps, more broadly that, number one, the Critical
20 Speed Yaw method should not have been used, but even assuming it
21 should have been used, it wasn't used correctly if this is where
22 the first chord was taken from?

23 A Correct.

24 MR. MILLER: Thank you.

25 THE COURT: All right. Any further testimony from,

1 Mr. Cover?

2 MR. MILLER: No, Your Honor.

3 THE COURT: All right. Sir, you can step down. Thank
4 you.

5 THE WITNESS: Yes, sir.

6 (Witness excused.)

7 THE COURT: All right. We're going to wrap up now,
8 but here's what I would like to do. I want --

9 Yes, ma'am.

10 MS. WEISMAN: Your Honor, we do have a request. We
11 received this report at 6:02 p.m. last Tuesday. The Court had
12 originally given the defense a mid-October date to have the
13 expert report. After several telephone conferences, you
14 extended that time, so we got it almost exactly one week ago.

15 We have tried to consult with an expert in crash
16 reconstruction. And while we've spoken with him, we have not
17 been able to hire him and have -- he really hasn't done a
18 thorough analysis. He's just briefly spoken with us after
19 scanning the report that Mr. Cover prepared.

20 What he testified about today was very different from
21 what's in his written report and we would like the opportunity
22 at the further hearing to present further expert testimony.

23 THE COURT: Well, first of all, we're beyond the
24 deadline when the government's expert for purposes of trial is
25 going to be allowed, because that was the government's initial

1 obligation. You've got your expert. It's Sergeant Manning.

2 I'm not going to extend the trial date. I'm not going
3 to allow reopening of this to have another round of experts.
4 The holdup of getting the information from the defense was in
5 part based upon getting raw data from the government as I
6 understand from earlier phone calls.

7 So, the report to the extent that he testified
8 inconsistently in his testimony today with whatever his written
9 report was, that's fair game for you to argue as to whether I
10 should pay attention to it or what weight I should give to it,
11 but I'm not going to allow now the government to get a brand new
12 accident reconstructionist to come in there and try and provide
13 substantive evidence to support the government's case. That
14 deadline has passed and I'm not going to allow it.

15 MS. WEISMAN: Thank you, Your Honor.

16 THE COURT: All right. So, here's what I need. I
17 want to hear argument on the record that we have today based
18 upon whatever exhibits have been filed and the written motions
19 and the testimony, the transcript today.

20 When we come back on the date that that is and we have
21 a couple dates we may deal with, I want counsel to be able to
22 argue for me in support of the issue which is in my mind the
23 ultimate issue here. And that is whether or not Sergeant
24 Manning gets to testify as to the speed of the car based upon
25 Critical Speed Yaw calculations. That's the key issue here.

1 He's going to get a chance to testify about
2 observations and investigation. As far as I'm concerned, the
3 whole business about the opinion about whether or not the car
4 seat contributed to the crash or not is a red herring. He can
5 testify as to that under Evidence Rule 701. It's rationally
6 based upon his perception and it's helpful to the fact finder,
7 and it doesn't involve scientific, technical or specialized
8 information.

9 There's no evidence there was a car seat there.
10 You've got a child expelled from the car. You've got
11 observations that the seatbelts were in a position where the --
12 that there -- that further support the fact that there was not a
13 car seat. And you've got a crash where the car turned over and
14 is virtually upside down or sideways against a tree, and you've
15 got a child that is outside.

16 There is -- that is absolutely something that can be
17 testified to by someone who has made the first -- had the
18 perception of these circumstances and give an opinion that would
19 be helpful for the jury that the absence of a car seat anywhere
20 on the accident scene and a child expelled from the car
21 contributed to the injuries that the child had. That's the most
22 unremarkable thing that you can possibly imagine. The evidence
23 screams out on that.

24 So, he's testifying as to that conclusion. He's not
25 testifying as to the speedometer reading. He's not testifying

1 as to the drugs. That's not coming in, but the observation and
2 the opinion, and the conclusion regarding the car seat is
3 absolutely appropriate.

4 The only thing that I see is questionable about
5 whether he's going to be able to testify or not about his
6 observations and his investigation is the speed, that's it,
7 whether he can give an opinion as to what the speed is.

8 It doesn't prevent the government from calling the
9 eyewitness to testify about what it is, showing the physical
10 wreckage, having the speed limit sign that's right there and
11 arguing based upon all of the reasonable inferences that come
12 from the, the physical evidence that the car had to be speeding
13 or otherwise operating in a reckless fashion.

14 He's not charged with speeding. He's charged with
15 vehicular homicide, which requires more than mere negligence in
16 the operation of the car. So, there's fair game to argue, even
17 if I decide that Manning can't testify as to speed. The issue
18 that all of this goes to is whether he gets to do the speed
19 test. And that's what I want to focus on in terms of the
20 argument.

21 What I want each side to be able to have and this
22 involves how quickly Linda can get us the transcript, is I want
23 you to have a copy of the transcript. I want each of you to be
24 able to give me a chart or some other graphic that identifies
25 what you believe to be the key record incidents that support the

1 evidence that you want to argue on the Critical Speed Yaw.

2 So, it can be the reports that were filed and their
3 exhibits. It can be the exhibits that were used in the
4 testimony. It can be the transcript of the testimony itself.

5 As for the defense, since it's their claim that the
6 methodology was not reliable and not reliably applied to the
7 facts of the case, what I need is a point by point demonstration
8 of what it is that the defense contends that officer -- excuse
9 me, Sergeant Manning did that was not consistent with the
10 methodology that would be reasonably relied upon by accident
11 reconstructionists to be able to use the Critical Speed Yaw
12 Formula to calculate the speed. And I want them point by point
13 by point.

14 I want the source of where the generally accepted
15 procedure that is to be applied by people in this specialized
16 area. This is the source of this. It can be testimony from the
17 witnesses. It could be admissions from Sergeant Manning. It
18 could be the attachments to the original reports. This is what
19 he did not do and this is why the ultimate opinion is not
20 reliable.

21 That's what I need from the defense to be able to
22 follow that argument. As good as Mr. Cover was, he is -- he's
23 spouting out formulas and running through terminology that is,
24 perhaps, not all essential to be able to be mastered in order to
25 make a determination as to whether this formula was properly

1 used.

2 As for the government, they -- I want to hear from
3 them what they, what they would say establishes either from the
4 filings and the exhibits or from the testimony of either
5 Sergeant Manning or from Mr. Cover why it is that the formula --
6 that the method used by the sergeant and his opinions on speed
7 fall within reliable methodology reliably applied to the facts
8 of the case.

9 And so, I'm not looking for a ten page memo. I'm
10 looking for a chart or a diagram or a spreadsheet, or something
11 so that I have that far enough in advance that when we argue
12 this issue about admissibility, I can have prepared to look at
13 what you believe is most important from the record for me to
14 consider to make my ruling.

15 This is going to be a pretrial definitive ruling on
16 the record. It is not going to be -- if it's one thing that's
17 clear about this to me is either the opinion on speed comes in
18 or it doesn't. There is -- this is not a situation where
19 there's enough doubt in my mind that it would be something that
20 goes to weight.

21 The judge doesn't have the luxury when there's a
22 challenge to methodology, reliable methodology reliably applied
23 to throw up his hands and say, all right, the jury can hear both
24 sides and decide who they want to believe. That's a
25 foundational obligation of the judge under Evidence Rule 104(a)

1 to determine whether or not the criteria of 702 are met. And
2 that is sufficient facts and data, reliable methodology reliably
3 applied to the facts, the Daubert factors that inform that. Is
4 there -- has the methodology been tested? Is there an error
5 rate?

6 Has the methodology been generally accepted as
7 reliable by those who practice that expertise or technical
8 specialty. If there are standard testing methodologies and
9 protocols, were they complied with? And has there been peer
10 review literature or other sources that say what the proper
11 procedures are.

12 That's what will inform my decision and that's what
13 you all can give me to help me rule the best way I can for you
14 before trial. So, it's either going to be that Manning's
15 testimony can include speed or does not, and that's the issue
16 that I see is appropriate for a Daubert ruling.

17 Other than that, it's clear that the sergeant is going
18 to be able to testify about the areas I said he can testify and
19 not testify about the areas that have already been said we're
20 not going to have him testify about, okay.

21 Now, this puts, unfortunately, a lot of pressure on
22 Linda, because one thing that Alisca suggested was, we have a
23 pretrial conference on December 23rd and it's in the afternoon.
24 If we can get the transcript quick enough for you all to use it
25 to give me your charts, your analytical outlines for me to look

1 at what you find important, and I have enough time to look at
2 it, we can hear the argument and make the ruling on the morning
3 of the 23rd and roll right into the pretrial conference in the
4 afternoon. But that's going to depend upon how quickly Linda
5 would be able to get the transcript, because you all want to
6 have that and read it, and then compare it to the other matters
7 and get me what it is. It doesn't do me any good if I get this
8 the night before because I'm not going to have time to review
9 it.

10 So that's my plan in terms of how I intend to proceed,
11 but I think the starting point is when Linda can reasonably
12 expect to have the transcript done and how much time you need
13 once you get that to give me what I need far enough advance of
14 the time we argue it to make sure that we know what it is.

15 Now, when is the trial of this? It's the end of
16 January, right, January 20-ish or something?

17 THE DEPUTY CLERK: Twenty-seventh.

18 THE COURT: So, I suppose if we had the pretrial
19 conference on everything but this on the 23rd, we could find the
20 time in January to do this, so that will give you enough time.

21 But Linda is going to be seeing her son who is in the
22 United States Navy after Christmas and she's not going to be
23 spending time doing this before then, and I'd like her not to
24 have to work nights and weekends more than she's already worked
25 nights this week for me to do this.

1 So, Linda, do you have a sense of when?

2 (Pause.)

3 THE COURT: So we'll have a copy of the transcript and
4 then if we have it on the 14th --

5 Here's what I'd like you all to do. I'd like you all
6 to go back and look at your schedules, and I'd like to have --
7 I'd like to have a week, ideally ten days to have your charts,
8 your spread sheets so that I --

9 I'm going to get the transcript and read it the minute
10 I get it. I'll have read that, so I'll know what it is, but I
11 just want to be able to plug it in and have the -- and know
12 where the exhibits are so I can have prepared myself for what
13 you think is important for me to focus on to make my ruling.

14 My suggestion is you look at your schedules and figure
15 out when that would be. I want simultaneous submission. We
16 don't have time for briefing, opposition and reply.
17 Simultaneous submission and then once we know that, we'll
18 coordinate with Alisca as to when we set the argument in.

19 It may have to be after pretrial conference and before
20 trial some day in January. I think we even had some dates that
21 we threw around that counsel were available, but not -- we don't
22 need the witnesses now. Their testimony is in the can. And
23 then this is --

24 This week is a shot week, so let's by early next week
25 have you all come back with the deadlines that you agree that

1 you can live with to do that. And once I know that, we'll set
2 the argument date, okay? Can we do that?

3 MS. WEISMAN: Yes, Your Honor. Thank you.

4 MR. MILLER: Go ahead.

5 THE COURT: She already said it. She said, thank you.

6 MR. MILLER: Your Honor, just one thing to say. I am
7 in a two plus week trial in front of Judge Xinis starting on
8 jury selection on the 6th and running the weeks of the 9th and
9 the 16th, so I'll have to consult with --

10 THE COURT: Sixth of December or 6th of January?

11 MR. MILLER: Sixth of December and running the
12 following two weeks. So coming, you know, right up before that
13 pretrial conference. So I'll have to consult with Mr. Smock. I
14 mean, it would be him who would do this, if he can.

15 THE COURT: Sure, understood, which is all the more
16 reason why if I hear back from you collectively next week after
17 you coordinate among yourselves and everything, and we can go
18 from there, okay?

19 All right. Thank you all very much. This is very
20 helpful.

21 (Recess at 5:36 p.m.)

22 * * *

23

24

25

CERTIFICATE OF COURT REPORTER

I, Linda C. Marshall, certify that the foregoing is a correct transcript of the record of proceedings in the above-entitled matter.

/s/

Linda C. Marshall, RPR
Official Court Reporter

| | | |
|---|---|---|
| . | 2014 [1] 78/13 2018 [3] 13/9 14/1 14/11 2019 [1] 1/7 20770 [2] 1/15 1/18 23 [3] 107/3 107/17 107/18 23 feet [2] 116/21 117/19 23rd [3] 150/23 151/3 151/19 25 [1] 53/2 25 degrees [1] 11/9 26 [1] 1/7 26.2 degrees [1] 108/9 28 feet [2] 116/22 117/19 2A [7] 19/10 19/22 20/8 21/24 23/16 23/22 105/21 2B [3] 21/24 97/2 105/21 2C [1] 105/21 2D [1] 105/21 2G [12] 22/22 22/23 23/4 23/16 23/19 24/24 97/15 97/16 97/17 97/21 98/10 99/1 2H [2] 24/25 98/10 2I [3] 20/8 24/25 99/1 | 7 701 [1] 146/5 702 [1] 150/1 703 [1] 55/1 70s [1] 140/2 710 [1] 1/18 |
| .06 [1] 123/4 .17 [4] 43/23 87/24 88/10 88/13 .25 [2] 43/23 116/12 .25 feet [1] 116/12 .35 [3] 101/1 106/17 108/15 .39 [1] 106/16 .64 [1] 123/6 .66 [1] 123/6 .7 [1] 46/19 .76 [1] 123/3 .8 [1] 46/19 .88 [1] 123/6 .9 [1] 123/6 / /s [1] 154/7 | | 8 80's [1] 122/14 80s [1] 140/2 82 [1] 81/13 84 [1] 2/8 88 miles [1] 81/13 |
| 0 | | 9 92 [1] 2/12 95 [2] 68/10 140/8 95th [2] 123/5 123/6 9th [1] 153/8 |
| 0525 [1] 1/5 0600 [1] 1/19 | | A |
| 1 | 3 | a wheel [1] 38/15 a/k/a [1] 115/13 abbreviated [1] 91/25 ability [3] 77/6 84/3 107/21 able [39] 5/22 6/21 6/24 7/4 11/10 22/5 23/23 35/1 39/6 39/9 48/11 49/23 49/24 54/3 59/7 69/19 71/24 72/22 80/15 83/20 88/7 90/11 90/12 90/25 102/23 130/9 133/22 140/3 144/17 145/21 147/5 147/21 147/24 148/11 148/21 148/24 150/18 151/5 152/11 about [84] 4/25 5/22 6/18 8/22 8/22 9/23 10/2 10/5 10/6 11/25 12/4 12/10 13/4 13/5 14/1 14/14 17/8 26/21 27/17 28/18 30/24 32/10 35/23 39/5 40/9 44/1 48/8 52/22 57/8 60/16 61/15 64/17 67/15 67/16 68/4 68/5 70/2 74/15 81/22 82/25 86/14 91/25 92/6 92/9 93/10 95/20 97/14 99/23 100/14 101/22 102/5 102/12 104/8 106/9 106/20 116/11 117/18 120/1 121/12 121/13 121/22 123/16 124/18 125/23 127/19 128/10 129/17 136/9 137/11 137/14 140/1 143/2 144/20 146/1 146/3 146/3 147/4 147/5 147/9 149/12 149/17 150/18 150/19 150/20 above [3] 60/8 62/13 154/4 above-entitled [1] 154/4 ABS [8] 25/24 26/2 26/7 26/22 44/20 95/8 95/10 132/14 absence [6] 49/4 54/15 86/8 102/6 106/7 146/19 absent [2] 86/1 122/22 absolute [1] 24/2 absolutely [17] 31/21 48/6 50/18 50/21 52/18 58/17 59/22 69/11 69/18 79/25 80/13 83/4 89/14 115/11 132/20 146/16 147/3 accelerates [1] 58/12 accelerating [3] 110/22 131/11 131/16 acceleration [18] 92/24 93/2 93/4 93/7 95/12 95/14 96/14 99/10 99/12 99/15 99/17 100/21 101/11 115/15 126/9 131/20 132/24 136/19 |
| 1.8 [1] 88/5 10 [1] 2/6 100 percent [1] 133/1 104 [1] 149/25 12 [5] 20/14 87/16 136/17 136/21 136/22 128 [1] 2/13 13 [8] 29/21 38/16 42/5 117/11 120/22 134/3 134/3 143/1 14 [2] 136/17 136/22 14 feet [2] 116/21 117/19 142 [1] 2/14 14th [1] 152/4 15 [3] 11/9 87/16 100/19 15-minute [1] 53/1 16 [6] 117/8 118/3 118/4 118/5 119/25 137/13 16th [1] 153/9 17 [3] 118/24 119/25 137/12 177 [1] 42/8 178 [2] 42/8 42/9 18 [4] 119/10 119/11 119/25 137/12 18-0525 [1] 1/5 18-CR-525 [1] 3/3 19 [6] 118/4 118/5 119/19 119/20 119/25 137/12 1945 [1] 116/3 1955 [1] 113/3 198 [10] 64/19 66/5 74/5 74/6 74/13 82/5 82/15 82/18 83/11 83/13 1:09 [1] 1/8 | 3.2 [1] 117/18 3.28 [1] 116/12 3.52 [1] 108/17 3.52 feet [1] 108/13 30 [4] 43/10 77/16 126/8 126/16 30 feet [3] 77/21 77/22 79/4 30-foot [1] 32/3 301 [1] 1/23 301-344-0600 [1] 1/19 301-344-4029 [1] 1/15 3229 [1] 1/23 344-3229 [1] 1/23 3:30 [1] 90/18 | |
| | 4 | |
| | 40 [1] 115/24 40 miles [2] 75/19 75/23 4029 [1] 1/15 441 [1] 111/9 45 [1] 11/8 45-degree [2] 65/1 66/12 4:30 [1] 90/19 | |
| | 5 | |
| | 5 feet [1] 106/20 5.0 feet [1] 106/20 525 [1] 3/3 55 [1] 64/23 56 [1] 2/7 5:15 [1] 91/4 5:36 [1] 153/21 | |
| 2 | 6 | |
| 2-inch [1] 79/5 2.0 [1] 43/4 2.5 [1] 43/19 20 [3] 117/1 117/3 117/16 20 degrees [2] 100/19 108/10 20-ish [1] 151/16 200 [1] 1/14 2000 [2] 138/4 138/6 2011 [1] 37/19 | 6-inch [3] 86/22 112/16 138/18 60 miles [1] 64/23 61 inches [1] 37/20 615 [1] 4/3 6411 [1] 1/18 6500 [1] 1/14 680 [1] 34/22 6:02 p.m [1] 144/11 6th [2] 153/8 153/10 | |

| | | |
|---|--|--|
| <p>A</p> <p>accelerometer [4] 44/9 44/12 44/17 122/16</p> <p>accept [2] 53/20 65/11</p> <p>acceptable [2] 39/19 103/10</p> <p>accepted [4] 81/8 92/14 148/14 150/6</p> <p>accepting [1] 65/5</p> <p>accident [30] 4/22 5/25 10/23 13/9 13/24 14/3 14/11 18/13 34/9 48/1 48/24 49/1 49/5 49/13 50/14 51/5 53/6 54/14 54/15 55/12 55/15 65/17 85/15 92/11 94/7 109/8 122/11 145/12 146/20 148/10</p> <p>accomplish [1] 36/16</p> <p>accomplishing [1] 112/24</p> <p>account [2] 47/15 80/11</p> <p>accuracy [2] 115/19 124/10</p> <p>accurate [13] 11/3 13/24 18/3 21/19 23/16 29/9 33/11 34/2 39/13 41/13 110/4 120/25 125/19</p> <p>accurately [4] 38/2 67/10 105/6 127/5</p> <p>across [9] 20/10 23/18 23/23 44/24 61/24 65/1 67/20 72/15 142/9</p> <p>acted [2] 131/24 131/25</p> <p>Action [1] 1/4</p> <p>actual [4] 14/4 28/18 105/15 109/6</p> <p>actually [42] 8/11 14/18 19/16 26/13 31/12 31/19 38/17 39/1 41/6 41/7 42/1 42/12 44/8 45/15 47/5 48/8 50/3 65/5 67/2 68/1 73/5 85/9 88/8 88/18 92/22 94/1 96/5 104/1 105/3 109/23 113/16 114/2 117/18 117/25 118/2 118/22 119/6 122/13 122/23 139/5 140/16 141/22</p> <p>add [1] 128/12</p> <p>addition [3] 14/24 100/23 114/20</p> <p>additional [5] 14/6 21/15 27/6 62/17 126/25</p> <p>additionally [2] 97/7 97/20</p> <p>addresses [1] 110/7</p> <p>adhesive [1] 46/4</p> <p>adjacent [2] 27/2 62/10</p> <p>adjustments [1] 33/16</p> <p>admissibility [2] 3/22 149/12</p> <p>admissible [2] 55/5 65/7</p> <p>admissions [1] 148/17</p> <p>advance [4] 3/21 6/11 149/11 151/13</p> <p>aerial [1] 82/1</p> <p>affect [3] 75/11 77/10 124/10</p> <p>affected [1] 18/4</p> <p>affirmatively [1] 70/6</p> <p>after [15] 18/12 24/8 70/11 78/7 81/11 85/5 104/6 111/2 134/17 135/16 144/13 144/18 151/22 152/19 153/16</p> <p>afternoon [7] 3/9 10/12 56/17 84/17 89/1 150/23 151/4</p> <p>afternoon's [1] 4/14</p> <p>afterwards [1] 20/16</p> <p>again [33] 14/1 14/11 25/2 26/1 26/23 29/13 30/17 30/18 32/21 35/5 46/23 60/24 61/7 61/21 62/22 67/24 68/25 70/15 76/2 76/19 77/8 84/17 84/18 86/5 91/20 105/25 108/20 112/23 119/16 119/19 120/22 123/22 125/14</p> <p>against [4] 46/13 118/11 135/18 146/14</p> | <p>aggregate [1] 140/18</p> <p>ago [5] 72/11 81/21 115/24 124/18 144/14</p> <p>agree [5] 14/16 32/21 47/21 105/22 152/25</p> <p>ahead [6] 8/14 83/13 84/14 91/6 96/3 153/4</p> <p>AIDED [1] 1/24</p> <p>alert [1] 110/19</p> <p>algebraic [1] 126/15</p> <p>Alisca [2] 150/22 152/18</p> <p>all [84] 6/13 7/8 7/19 11/1 11/20 16/9 16/13 16/20 21/8 21/15 32/7 33/10 40/22 43/24 49/16 50/1 53/25 54/8 57/9 57/11 57/12 57/13 62/18 64/6 69/22 72/25 75/10 78/5 80/4 82/7 83/8 84/6 84/11 86/25 88/20 89/18 89/21 90/3 90/13 91/6 91/11 93/11 95/17 96/21 100/12 100/19 102/24 105/22 106/10 113/23 113/24 114/25 114/25 115/4 121/21 121/24 122/7 122/25 123/2 123/5 128/8 128/14 130/7 133/14 133/17 135/1 143/25 144/3 144/7 144/23 145/16 147/11 147/18 148/24 149/23 150/13 150/24 151/5 152/5 152/5 152/25 153/15 153/19 153/19</p> <p>alleged [1] 106/1</p> <p>allow [9] 4/15 22/12 82/15 92/11 93/18 103/8 145/3 145/11 145/14</p> <p>allowed [2] 121/19 144/25</p> <p>allowing [1] 103/6</p> <p>allows [2] 7/4 132/2</p> <p>almost [6] 34/11 41/12 62/16 63/14 65/1 144/14</p> <p>alone [2] 58/21 127/9</p> <p>along [23] 25/3 25/4 32/18 33/4 35/21 35/22 38/3 47/11 60/1 61/10 62/13 62/14 62/22 63/1 63/11 68/7 68/13 72/4 77/8 116/9 116/14 119/21 134/2</p> <p>alongside [1] 109/14</p> <p>Alpha [2] 26/3 26/4</p> <p>already [7] 8/17 85/5 111/13 140/10 150/19 151/24 153/5</p> <p>also [33] 3/16 14/24 18/2 29/4 33/15 42/23 47/8 71/5 75/21 79/1 79/23 79/23 80/11 86/20 94/16 97/8 98/18 111/8 112/13 114/7 126/3 126/9 126/16 131/11 131/24 133/3 135/24 138/16 138/23 140/14 140/15 141/7 141/12</p> <p>alternate [1] 35/14</p> <p>alternative [5] 15/10 32/9 49/12 126/19 126/25</p> <p>although [1] 67/2</p> <p>Altima [1] 37/19</p> <p>aluminum [1] 70/23</p> <p>always [5] 46/18 46/25 76/21 77/21 114/12</p> <p>am [11] 17/10 22/5 23/4 24/17 27/24 43/12 54/7 54/22 88/9 89/5 153/6</p> <p>ambulance [1] 66/12</p> <p>AMERICA [1] 1/4</p> <p>among [1] 153/17</p> <p>amount [5] 20/12 33/5 44/24 67/6 74/24</p> <p>analysis [38] 9/25 11/25 13/5 13/11 14/17 15/7 16/3 17/1 20/22 21/5 21/6 30/25 47/22 47/22 48/12 51/2 79/13</p> | <p>83/2 84/24 98/13 104/21 108/20 110/25 111/11 120/2 120/7 122/8 123/19 125/13 125/18 126/20 127/9 127/12 134/10 136/15 137/4 143/9 144/18</p> <p>analytical [1] 150/25</p> <p>analyze [2] 58/25 76/23</p> <p>analyzing [2] 75/2 76/25</p> <p>and-a-half [2] 106/20 106/22</p> <p>Andrew [1] 3/3</p> <p>angle [11] 65/1 66/12 95/6 95/25 108/8 110/21 110/24 111/8 113/15 126/21 131/12</p> <p>angled [15] 17/24 18/1 21/19 21/25 22/4 23/12 23/13 23/24 24/5 25/1 25/1 25/7 25/22 67/3 121/7</p> <p>angles [2] 114/1 114/2</p> <p>another [33] 15/12 15/14 15/23 15/24 16/2 27/22 31/5 33/6 36/5 36/12 44/19 47/20 47/21 69/15 70/3 70/14 70/20 82/14 85/4 86/7 95/9 100/16 110/23 117/10 119/13 119/21 123/10 123/18 123/23 132/16 132/25 136/11 145/3</p> <p>answer [16] 9/3 9/6 9/9 9/10 9/11 9/12 11/14 13/1 42/3 65/4 93/13 96/7 101/14 101/17 121/24 143/19</p> <p>answered [2] 51/1 101/8</p> <p>answering [1] 80/12</p> <p>answers [2] 11/3 115/5</p> <p>antecedent [1] 93/25</p> <p>anti [4] 26/7 26/8 26/9 45/17</p> <p>anti-lock [4] 26/7 26/8 26/9 45/17</p> <p>anticipate [2] 89/8 89/9</p> <p>any [67] 5/13 15/6 15/10 15/16 15/16 15/18 16/21 18/19 19/13 20/9 20/17 20/20 21/3 21/5 23/22 23/24 24/25 34/8 37/6 41/15 46/11 48/25 48/25 49/13 50/7 50/7 51/2 51/2 51/3 51/25 52/13 54/15 55/9 55/23 64/14 65/15 70/4 77/1 77/3 83/20 84/8 84/21 86/9 86/25 88/13 88/13 89/14 93/1 94/6 94/14 98/12 98/21 106/3 109/17 114/17 114/23 115/12 123/20 124/12 125/6 127/23 127/23 128/13 139/6 141/17 143/25 151/7</p> <p>anybody [3] 51/25 52/4 89/8</p> <p>anymore [1] 58/10</p> <p>anyone [5] 21/24 49/24 52/13 52/23 70/25</p> <p>anything [14] 37/7 40/9 52/22 70/2 70/13 76/17 96/19 97/11 97/17 97/22 106/3 106/17 108/10 121/12</p> <p>anywhere [2] 100/19 146/19</p> <p>apart [3] 116/8 116/18 117/18</p> <p>apologize [1] 41/22</p> <p>app [1] 122/19</p> <p>apparently [1] 138/15</p> <p>appear [5] 19/23 25/7 30/18 31/24 141/20</p> <p>APPEARANCES [1] 1/12</p> <p>appeared [3] 60/18 73/7 74/19</p> <p>appears [12] 10/24 60/13 63/24 63/25 66/15 66/24 67/2 67/6 67/8 72/4 72/5 92/7</p> <p>application [6] 17/1 26/16 52/8 98/13 115/22 143/8</p> <p>applied [13] 6/4 6/19 12/10 13/17 92/13</p> |
|---|--|--|

| | | |
|---|--|--|
| <p>A</p> <p>applied... [8] 100/17 127/5 133/25 148/6 148/15 149/7 149/22 150/3</p> <p>apply [3] 96/14 111/6 126/22</p> <p>applying [1] 115/15</p> <p>appreciate [2] 89/20 91/8</p> <p>approach [9] 16/3 47/25 48/3 48/15 48/16 49/13 115/11 127/6 127/10</p> <p>approached [1] 5/18</p> <p>approaches [2] 48/7 106/24</p> <p>approaching [2] 64/21 64/24</p> <p>appropriate [11] 5/18 47/22 65/8 106/24 107/7 110/25 123/15 125/18 128/5 147/3 150/16</p> <p>appropriateness [2] 92/6 92/10</p> <p>approximate [8] 27/16 35/7 105/20 117/6 120/24 134/4 143/2 143/10</p> <p>approximately [4] 38/19 64/23 81/13 116/18</p> <p>arbitrary [1] 113/24</p> <p>arc [4] 29/17 30/21 104/25 118/1</p> <p>arced [1] 119/22</p> <p>archives [1] 138/14</p> <p>arcing [3] 29/10 29/11 41/21</p> <p>are [157]</p> <p>area [22] 6/1 33/2 35/24 35/25 47/17 61/11 61/11 61/13 62/16 63/1 63/15 68/15 72/10 74/6 74/7 76/10 82/21 104/11 105/2 116/15 117/5 148/16</p> <p>areas [2] 150/18 150/19</p> <p>argue [11] 9/5 9/17 90/14 91/1 92/8 145/9 145/22 147/16 148/1 149/11 151/14</p> <p>arguing [1] 147/11</p> <p>argument [10] 56/10 90/20 90/23 128/10 145/17 147/20 148/22 151/2 152/18 153/2</p> <p>arithmetic [1] 87/21</p> <p>arms [1] 92/16</p> <p>around [18] 18/5 19/2 28/8 28/9 36/2 42/1 43/21 49/7 49/20 71/6 78/8 78/10 83/19 92/16 100/9 116/21 140/5 152/21</p> <p>arrived [1] 93/20</p> <p>article [1] 53/6</p> <p>as [214]</p> <p>aside [1] 16/22</p> <p>ask [24] 3/12 6/18 9/24 10/7 10/15 11/14 16/6 19/9 19/22 20/15 23/1 23/10 29/21 36/12 37/14 39/2 42/5 50/19 52/13 87/10 87/16 96/6 97/16 124/9</p> <p>asked [6] 9/8 52/14 81/22 134/16 134/21 137/9</p> <p>asking [4] 3/17 16/10 67/16 75/18</p> <p>aspect [1] 122/8</p> <p>asphalt [9] 46/5 46/12 46/20 46/20 54/11 67/13 68/21 123/3 140/16</p> <p>asphaltic [1] 68/6</p> <p>asserted [1] 65/6</p> <p>assessment [1] 83/21</p> <p>assigned [1] 115/2</p> <p>assist [1] 111/8</p> <p>Assistant [1] 3/10</p> <p>assisting [1] 35/20</p> <p>associate [1] 75/7</p> <p>assume [2] 12/1 30/22</p> | <p>assumes [1] 120/23</p> <p>assuming [6] 50/25 51/1 90/18 101/15 131/4 143/20</p> <p>assumption [1] 49/11</p> <p>at [148] 3/11 5/16 7/1 8/24 10/16 11/1 11/2 11/8 11/13 12/16 14/11 16/14 16/16 18/24 19/1 19/22 20/16 21/12 21/17 23/4 23/17 23/19 24/8 24/9 24/11 24/17 25/8 25/17 26/20 27/9 28/5 29/15 31/22 34/10 35/6 38/16 41/17 42/11 42/14 43/13 49/17 49/19 50/8 51/11 51/24 53/2 53/13 53/18 54/21 56/20 56/25 59/24 60/3 60/7 61/6 61/18 62/3 62/21 66/9 66/12 69/9 70/16 72/12 72/18 72/24 73/3 73/3 73/4 73/20 74/16 75/14 75/21 76/11 76/24 77/1 78/4 78/6 80/16 81/7 81/17 82/1 82/17 85/19 85/22 86/1 86/2 86/22 87/10 88/8 88/16 89/12 91/4 91/24 93/20 95/6 95/23 96/6 96/21 97/16 97/20 98/11 98/15 99/1 99/5 102/25 104/19 105/21 105/25 106/10 106/20 108/12 109/5 109/20 111/9 111/16 112/13 115/8 119/1 119/2 119/4 119/14 119/22 120/8 120/22 121/5 125/11 125/14 125/21 128/16 131/23 131/24 132/5 132/12 133/25 135/2 135/24 138/25 139/19 141/24 143/7 144/11 144/22 149/12 151/1 151/1 152/6 152/14 153/21</p> <p>attached [2] 16/11 86/3</p> <p>attachments [1] 148/18</p> <p>attain [1] 86/16</p> <p>attempt [3] 20/9 83/9 84/4</p> <p>attempting [1] 127/1</p> <p>attention [2] 118/3 145/10</p> <p>attest [1] 68/25</p> <p>Attorney [1] 1/14</p> <p>Attorneys [1] 89/7</p> <p>attributes [5] 17/19 17/23 107/23 115/2 117/14</p> <p>AUSA [1] 54/3</p> <p>author [3] 12/20 40/7 123/1</p> <p>authority [1] 139/25</p> <p>automatically [1] 115/4</p> <p>Automotive [1] 110/9</p> <p>available [5] 16/14 19/12 39/25 124/13 152/21</p> <p>average [1] 123/3</p> <p>averted [1] 80/16</p> <p>aviation [1] 129/5</p> <p>aware [2] 20/9 142/8</p> <p>away [4] 11/10 27/6 51/19 140/20</p> <p>awkward [1] 11/5</p> <p>axis [7] 33/17 100/11 100/11 100/12 100/14 100/15 129/17</p> <p>B</p> <p>back [47] 4/16 8/4 22/21 23/9 24/10 27/14 28/7 38/23 38/25 46/18 48/21 52/24 53/2 62/9 62/15 62/18 63/4 65/25 67/18 67/18 71/8 73/18 82/6 83/10 85/23 88/25 89/8 89/9 90/23 97/15 98/24 100/3 103/5 104/15 105/21 114/6 114/6 114/21 117/8 120/18 128/16 131/22 132/7 145/20 152/6 152/25 153/16</p> | <p>back-up [1] 4/16</p> <p>background [1] 4/25</p> <p>backwards [1] 62/13</p> <p>Badge [1] 34/21</p> <p>bag [2] 8/4 130/21</p> <p>Baker [1] 116/2</p> <p>balanced [1] 100/5</p> <p>bald [4] 77/5 77/6 96/16 96/18</p> <p>Baltimore [11] 12/8 57/3 60/2 61/8 62/23 63/9 64/19 136/5 141/5 142/6 142/8</p> <p>Baltimore-Washington [10] 57/3 60/2 61/8 62/23 63/9 64/19 136/5 141/5 142/6 142/8</p> <p>bang [2] 6/8 7/3</p> <p>bark [1] 62/14</p> <p>base [7] 33/10 36/24 65/20 100/25 108/5 112/22 135/23</p> <p>based [58] 9/22 12/16 20/15 20/16 21/7 25/6 27/5 31/16 32/18 33/21 38/8 41/2 45/1 48/10 49/10 49/12 50/8 51/9 52/9 59/3 60/22 60/25 64/10 73/3 73/19 74/19 75/12 75/25 76/12 77/3 78/2 79/16 80/24 81/10 81/12 83/19 86/11 87/7 92/25 96/1 105/18 106/23 108/20 115/1 116/4 120/2 120/10 124/6 127/17 133/24 138/24 142/13 143/18 145/5 145/17 145/24 146/6 147/11</p> <p>bases [1] 128/11</p> <p>basic [6] 116/1 119/7 125/6 126/4 126/6 126/22</p> <p>basically [19] 13/23 26/10 28/5 32/24 33/12 33/17 33/19 44/20 44/22 44/23 46/7 57/20 60/19 68/6 71/23 71/25 72/8 72/24 79/15</p> <p>basing [1] 61/21</p> <p>basis [16] 4/6 27/4 52/8 54/21 54/22 54/23 55/18 55/24 65/23 104/18 111/3 123/24 124/4 124/5 124/18 124/19</p> <p>Bates [2] 38/25 42/7</p> <p>bathroom [1] 52/22</p> <p>batteries [1] 22/19</p> <p>be [214]</p> <p>bearing [1] 36/19</p> <p>because [50] 6/4 8/1 8/5 9/5 9/12 11/7 18/2 39/23 39/24 41/6 41/6 41/18 41/25 42/20 44/7 51/20 51/22 78/3 86/21 90/24 95/25 96/10 102/7 104/7 105/7 107/13 110/1 110/2 110/16 111/12 111/13 112/7 114/15 114/22 115/11 117/22 120/15 122/22 124/25 127/10 131/19 134/17 138/25 139/17 140/10 140/12 144/25 150/22 151/5 151/8</p> <p>because what [1] 44/7</p> <p>becomes [3] 42/19 82/19 87/1</p> <p>been [47] 3/23 3/24 6/7 15/17 16/9 27/3 32/17 33/18 33/25 35/1 35/8 42/18 45/1 46/23 47/3 49/13 51/5 52/1 52/6 52/14 56/23 58/3 59/23 61/4 61/25 66/12 67/22 71/1 80/8 80/15 86/7 92/8 96/15 106/4 107/7 116/2 116/4 116/5 121/11 143/20 143/21 144/17 145/18 150/4 150/6 150/9 150/19</p> <p>before [32] 1/10 7/19 36/13 38/16 66/5 73/25 74/1 79/10 82/4 82/5 83/12 83/15 85/11 88/3 89/15 90/19 96/14 97/21 99/7 99/8 102/2 109/20 121/20 125/23</p> |
|---|--|--|

| | | |
|--|--|--|
| <p>B</p> <p>before... [8] 133/12 135/20 140/22 150/14 151/8 151/23 152/19 153/12</p> <p>beforehand [1] 4/18</p> <p>began [5] 67/19 83/22 122/15 141/19 141/22</p> <p>begin [6] 6/15 36/10 83/10 99/7 100/18 121/19</p> <p>beginning [3] 68/1 72/23 83/9</p> <p>begins [5] 81/23 98/22 99/23 125/5 132/6</p> <p>behalf [4] 2/3 2/10 3/8 3/10</p> <p>behind [3] 64/21 123/23 125/14</p> <p>being [28] 10/17 11/10 12/20 18/5 25/23 39/22 41/22 46/24 49/7 60/23 69/24 70/16 71/10 73/19 75/3 75/6 77/6 85/17 93/17 100/17 101/22 110/13 112/7 115/17 122/6 124/18 130/23 139/8</p> <p>believe [20] 28/18 29/10 29/11 36/25 41/19 44/13 44/17 46/16 47/2 47/7 58/22 58/22 63/20 73/11 81/13 97/2 127/19 147/25 149/13 149/24</p> <p>believed [4] 18/17 32/19 38/13 102/16</p> <p>below [3] 27/17 81/22 87/23</p> <p>benchmark [1] 113/22</p> <p>bender [1] 71/1</p> <p>best [10] 6/14 9/6 20/4 31/18 104/1 109/7 138/4 138/6 138/19 150/13</p> <p>better [5] 19/17 56/14 109/10 109/16 109/25</p> <p>between [25] 29/7 43/19 67/17 74/8 81/13 84/19 94/4 95/24 100/24 102/25 103/19 105/12 106/14 108/6 108/13 117/20 118/18 124/13 124/15 124/24 125/16 130/3 131/21 132/20 132/23</p> <p>beyond [5] 82/18 98/14 98/17 98/18 144/23</p> <p>bible [1] 39/21</p> <p>binder [8] 8/12 8/12 10/14 19/9 19/19 29/1 118/8 118/10</p> <p>bit [8] 8/1 64/4 67/4 71/18 71/18 75/13 91/25 119/12</p> <p>bites [1] 40/6</p> <p>bits [1] 140/12</p> <p>black [1] 71/7</p> <p>blackish [1] 24/17</p> <p>Blackmore [5] 18/23 19/6 19/24 20/1 20/21</p> <p>Blakemore [2] 19/4 19/5</p> <p>blood [1] 62/11</p> <p>blow [1] 140/19</p> <p>blunt [2] 101/22 101/23</p> <p>book [12] 39/5 39/13 79/11 79/12 93/1 114/24 116/2 116/5 138/1 138/3 138/8 138/13</p> <p>boots [1] 62/11</p> <p>both [16] 3/23 4/10 4/14 4/16 6/24 7/1 15/14 25/8 34/11 35/11 35/13 64/11 98/10 113/14 140/17 149/23</p> <p>bottom [10] 63/24 64/2 72/19 73/21 73/22 74/1 108/12 111/9 112/14 119/1</p> <p>brake [4] 45/17 125/6 128/23 131/9</p> <p>brakes [10] 26/11 26/14 26/17 44/22 45/19 95/8 128/25 131/6 132/11 132/14</p> <p>braking [12] 25/25 26/7 26/8 26/9 58/11</p> | <p>94/16 110/22 121/19 121/20 122/15 124/17 132/19</p> <p>branches [1] 63/16</p> <p>brand [1] 145/11</p> <p>bravo [1] 26/4</p> <p>break [9] 13/14 52/17 52/20 53/1 101/14 126/22 127/13 128/8 128/16</p> <p>breaks [1] 84/2</p> <p>Brief [2] 53/3 128/18</p> <p>briefing [1] 152/16</p> <p>briefly [2] 142/23 144/18</p> <p>bring [1] 16/18</p> <p>broadly [1] 143/19</p> <p>broken [4] 15/16 94/8 94/13 132/4</p> <p>brought [1] 4/20</p> <p>bubble [1] 33/14</p> <p>buck [2] 6/9 7/4</p> <p>buckle [1] 50/4</p> <p>buckled [1] 50/3</p> <p>buckles [2] 50/2 50/9</p> <p>bump [1] 71/2</p> <p>bumper [6] 15/17 71/2 85/25 86/8 86/8 86/10</p> <p>business [1] 146/3</p> <p>but [141] 7/22 9/10 9/23 11/14 16/19 18/2 18/7 19/1 19/14 19/17 20/13 22/13 24/4 30/2 31/23 35/7 35/16 36/1 36/9 38/16 39/9 39/19 40/3 41/22 43/13 51/14 52/4 52/23 53/12 54/7 55/5 55/22 57/13 58/10 58/14 58/25 59/5 59/19 60/4 60/20 61/12 61/16 62/25 64/8 65/5 65/10 65/13 68/25 69/1 69/21 71/19 73/15 73/19 74/20 77/1 84/24 85/11 85/20 86/24 87/23 87/25 88/4 90/16 90/18 92/9 93/10 94/16 95/17 95/18 95/23 96/6 96/9 98/5 100/8 100/18 101/6 101/22 102/16 103/11 103/11 104/15 105/12 107/21 108/11 109/10 109/16 111/9 112/13 114/9 115/5 115/21 115/25 119/3 119/9 121/3 121/8 122/15 122/22 123/17 127/12 127/12 128/10 129/6 129/7 129/23 130/16 130/22 131/3 131/7 132/3 132/20 133/7 133/12 133/14 133/25 134/24 135/4 136/12 136/19 137/4 137/4 137/9 138/16 138/23 139/17 140/17 140/24 140/24 141/11 141/14 142/11 143/20 144/8 145/11 147/1 151/4 151/11 151/19 151/21 152/10 152/21</p> <p>BW [1] 51/18</p> <p>C</p> <p>C-O-V-E-R [1] 91/19</p> <p>CAD [30] 14/8 14/13 29/16 32/11 32/14 32/15 32/17 36/20 36/22 37/3 37/6 43/22 71/21 75/16 81/22 102/25 103/18 103/20 104/22 104/24 105/2 107/19 107/25 108/2 110/3 114/25 117/4 117/13 117/22 120/1</p> <p>cage [1] 52/5</p> <p>calculate [12] 51/3 101/18 104/6 105/16 107/8 115/13 127/1 127/12 127/15 135/1 135/2 148/12</p> <p>calculated [2] 75/15 127/24</p> <p>calculates [2] 114/3 114/7</p> <p>calculating [4] 59/7 92/7 96/2 137/1</p> | <p>calculation [9] 39/7 75/12 75/18 93/18 99/6 102/7 103/9 116/15 126/23</p> <p>calculations [11] 20/23 32/13 37/18 44/25 47/15 102/4 102/9 108/15 122/2 127/18 145/25</p> <p>calibrates [1] 36/13</p> <p>call [17] 12/6 27/21 46/3 53/19 55/10 70/23 74/12 89/24 90/5 94/14 95/12 95/25 97/15 97/15 103/1 117/4 140/21</p> <p>called [13] 7/1 11/25 12/15 12/21 13/20 15/12 36/8 44/12 44/23 45/5 58/11 125/24 136/1</p> <p>calling [3] 89/8 89/9 147/8</p> <p>calls [1] 145/6</p> <p>came [9] 18/14 32/25 43/22 71/25 78/7 80/19 80/20 86/3 135/17</p> <p>can [194]</p> <p>can't [23] 9/12 20/13 24/2 24/5 27/6 28/16 35/4 35/4 51/18 52/3 68/25 73/15 84/25 86/2 86/24 89/1 124/2 132/13 132/14 133/1 139/16 139/17 147/17</p> <p>cannot [3] 21/20 122/3 134/1</p> <p>capture [3] 109/15 111/14 135/4</p> <p>car [59] 14/18 15/4 17/9 26/25 27/6 28/1 28/3 28/9 37/10 45/16 49/3 49/3 49/4 49/19 49/20 49/20 49/20 49/25 50/4 50/10 50/10 50/11 50/12 50/13 51/2 55/21 56/1 62/11 69/6 69/14 69/16 80/24 81/1 83/13 83/21 99/3 99/17 101/10 122/20 128/23 129/2 129/3 129/14 131/1 131/16 132/18 132/19 133/6 145/24 146/3 146/9 146/10 146/13 146/13 146/19 146/20 147/2 147/12 147/16</p> <p>carbon [2] 130/22 130/23</p> <p>cards [1] 54/8</p> <p>care [2] 113/22 128/11</p> <p>career [1] 7/21</p> <p>cars [6] 29/13 69/9 100/8 131/23 139/5 139/9</p> <p>CAS0178 [2] 39/1 42/7</p> <p>case [47] 3/2 3/3 3/21 6/1 8/19 9/16 10/4 12/11 13/1 13/9 13/15 14/25 25/16 30/12 30/16 32/6 33/2 42/23 43/1 44/4 48/7 53/15 67/3 79/6 79/7 90/9 92/13 99/24 102/19 106/16 109/14 112/13 112/14 112/15 120/17 123/8 127/20 129/15 135/6 138/10 138/14 138/17 141/13 141/18 145/13 148/7 149/8</p> <p>cases [4] 7/21 10/3 14/17 123/7</p> <p>categories [2] 4/9 94/8</p> <p>cause [2] 60/21 131/4</p> <p>caused [2] 94/15 95/3</p> <p>caveat [1] 70/16</p> <p>CCTV [1] 54/16</p> <p>CDS [1] 5/14</p> <p>Cellar [1] 34/19</p> <p>cellphone [1] 21/4</p> <p>center [31] 18/5 18/5 23/8 23/18 24/1 35/2 35/18 60/4 73/1 95/23 96/1 99/24 100/1 100/3 100/8 100/9 100/13 103/24 104/4 104/7 104/8 105/23 108/7 115/9 115/18 125/9 129/7 130/16 131/2 131/5 141/10</p> <p>central [1] 6/6</p> <p>certain [5] 20/13 73/15 75/10 86/2 87/8</p> |
|--|--|--|

| | | |
|--|---|---|
| C | | |
| certainly [9] 5/3 7/7 51/11 52/4 56/12 89/2 89/23 109/9 118/14 certainty [1] 24/3 CERTIFICATE [1] 154/1 certify [1] 154/2 cetera [4] 12/13 21/24 68/14 72/2 chaining [2] 113/16 113/17 challenge [1] 149/22 challenged [1] 6/7 challenges [2] 4/20 4/22 chance [3] 52/6 90/14 146/1 chances [1] 49/8 change [6] 47/13 47/15 105/10 118/15 119/16 125/7 changed [3] 80/7 105/3 118/2 changing [1] 119/13 channel [1] 35/14 chapter [6] 77/17 78/6 79/7 79/15 79/17 112/13 characteristic [2] 84/21 97/11 characteristics [3] 94/25 95/15 138/24 characterize [2] 106/8 143/18 characterizes [1] 26/21 charge [1] 11/5 charged [2] 147/14 147/14 chart [5] 32/14 102/4 120/24 147/24 149/10 charts [2] 150/25 152/7 check [3] 89/6 118/11 127/7 Cherrywood [1] 1/14 child [16] 48/21 48/22 49/7 49/12 50/11 50/15 50/15 51/4 51/4 80/16 80/18 128/11 146/10 146/15 146/20 146/21 child's [1] 114/23 children [4] 50/3 62/10 90/10 91/6 chip [1] 44/20 choose [1] 86/21 chord [45] 31/25 33/3 38/7 38/11 39/15 40/11 41/9 41/9 74/25 77/13 77/15 77/16 77/20 77/25 78/5 78/18 79/4 81/5 86/21 87/6 98/19 101/4 101/18 102/11 102/20 103/6 104/18 104/23 105/16 106/2 109/21 110/18 111/3 111/11 112/15 118/20 120/5 120/18 120/19 120/19 120/20 138/8 143/7 143/13 143/22 chords [12] 37/23 38/3 38/5 39/6 40/16 40/20 41/4 42/17 86/16 103/9 110/12 110/14 chose [4] 123/25 123/25 124/7 124/11 chosen [2] 124/19 124/21 Christmas [1] 151/22 CHRISTOPHER [2] 1/6 3/3 circle [2] 33/18 132/22 Circuit [1] 10/4 circular [3] 71/7 92/25 116/4 circumstance [2] 39/23 90/18 circumstances [5] 13/13 32/3 47/23 125/4 146/18 cited [1] 10/3 citing [1] 123/20 civil [1] 123/8 claim [2] 4/8 148/5 clarify [9] 33/8 33/25 50/25 57/11 79/23 | 84/19 85/3 93/24 115/7 class [1] 12/12 classes [1] 113/1 classic [1] 130/19 clear [10] 9/7 49/10 60/4 61/12 83/25 101/9 103/15 141/14 149/17 150/17 clearer [1] 29/17 clearly [7] 62/15 62/25 98/18 101/17 105/8 110/1 134/9 clockwise [14] 76/14 76/16 99/25 100/13 105/4 105/4 118/1 118/19 118/22 129/16 129/17 129/21 135/13 136/6 close [11] 23/13 34/15 35/13 110/3 111/16 111/17 112/1 112/10 120/21 129/23 138/25 closing [1] 56/10 coded [1] 115/4 coefficient [6] 31/10 44/11 45/2 45/25 46/6 124/14 coefficients [1] 46/2 coined [1] 113/2 collapse [1] 96/23 collect [2] 30/24 113/25 collected [1] 116/7 collection [2] 109/4 113/4 collectively [2] 119/24 153/16 collision [8] 48/23 55/12 55/13 55/25 62/6 86/6 86/7 94/18 colored [2] 70/22 71/3 combination [2] 35/11 140/16 combine [4] 93/3 93/5 126/11 126/14 combined [1] 113/3 combining [1] 132/21 come [21] 5/2 7/9 45/24 46/14 48/3 52/23 53/2 88/6 90/23 91/11 95/9 104/14 114/6 122/12 124/6 128/16 131/15 145/12 145/20 147/11 152/25 comes [4] 72/9 126/9 129/5 149/17 comfortable [1] 89/4 coming [8] 18/12 23/25 28/7 33/22 123/23 125/14 147/1 153/12 comments [1] 54/20 Committee [1] 12/8 common [8] 49/6 49/11 49/15 51/15 52/10 80/7 94/13 126/2 commonly [1] 81/8 communicating [1] 114/20 commuter [1] 44/21 company [1] 122/17 compare [3] 53/19 117/9 151/6 compared [3] 25/23 36/4 66/22 compartment [1] 51/12 compass [1] 36/17 complete [2] 83/15 87/8 completed [3] 34/11 72/1 85/5 completely [1] 76/10 complied [1] 150/9 comply [1] 123/18 component [2] 44/2 87/22 composition [1] 76/20 compute [2] 87/7 88/17 computer [4] 1/24 26/14 72/1 127/14 COMPUTER-AIDED [1] 1/24 concentrated [1] 61/11 concern [1] 93/21 | concerned [1] 146/2 conclude [2] 27/24 58/20 concluded [1] 121/13 conclusion [13] 48/4 49/2 49/4 49/10 50/12 52/7 52/7 92/15 93/19 107/5 127/19 146/24 147/2 conclusions [6] 18/14 48/4 48/8 48/19 83/20 136/1 concrete [8] 25/3 46/3 46/11 67/5 67/14 68/12 68/13 69/4 concrete-type [1] 67/14 condition [1] 70/16 conditions [1] 46/13 conducive [1] 122/23 conduct [1] 69/18 conducted [1] 13/16 conducting [2] 44/19 109/19 conference [5] 150/23 151/3 151/19 152/19 153/13 conferences [1] 144/13 confidence [1] 127/23 confirm [3] 49/24 96/13 99/11 confirming [1] 65/13 conflicting [2] 38/4 78/4 conjunction [3] 14/6 15/13 72/9 connect [3] 71/23 115/1 115/4 connected [1] 103/2 connection [6] 4/13 13/1 14/3 72/20 97/4 97/7 consider [3] 53/21 109/4 149/14 consideration [4] 59/20 65/16 124/16 126/21 considered [2] 125/10 125/15 Considering [1] 52/15 consisted [1] 67/13 consistent [12] 27/8 75/13 75/20 92/12 101/4 104/24 105/12 108/20 108/24 109/6 115/8 148/9 consult [3] 144/15 153/9 153/13 consuming [2] 104/5 127/15 contact [1] 96/24 contain [1] 87/19 contains [1] 10/23 contends [1] 148/8 contention [1] 28/4 continually [1] 26/19 continue [2] 74/3 96/8 continued [2] 76/10 141/19 continues [2] 74/13 98/22 continuing [2] 80/19 101/9 continuous [2] 104/25 118/1 contrast [2] 141/13 141/15 contribute [1] 50/16 contributed [3] 49/5 146/4 146/21 contributory [1] 48/22 control [19] 15/23 26/10 47/5 47/16 67/19 73/7 73/12 81/11 92/24 98/15 98/18 99/4 99/8 99/17 125/11 125/21 133/6 133/10 135/13 controlled [3] 5/13 62/5 136/6 convert [1] 93/14 convinced [1] 4/24 coordinate [2] 152/18 153/17 coordinates [1] 113/19 copy [9] 8/3 8/9 8/15 8/17 10/19 54/3 54/5 147/23 152/3 |

| | | |
|---|--|---|
| <p>C</p> <p>cord [2] 32/3 43/10</p> <p>corner [7] 24/15 27/10 27/15 27/17 27/25 28/2 97/24</p> <p>correct [87] 13/25 14/9 14/25 15/5 15/25 16/1 16/5 17/1 17/4 17/5 17/25 18/14 18/18 21/10 21/15 23/4 23/20 25/9 25/10 28/23 29/8 31/3 31/13 31/14 31/16 31/20 32/4 32/11 33/4 38/21 38/22 40/16 41/7 41/18 43/2 43/17 44/5 44/9 47/3 48/1 48/5 49/14 49/21 52/10 66/20 70/11 74/9 77/25 78/14 84/22 85/1 85/21 86/12 86/13 87/3 87/7 88/1 88/6 88/9 88/11 88/15 94/3 98/7 101/12 101/19 101/20 104/3 104/3 104/20 104/21 107/14 107/15 107/16 109/2 111/5 112/19 121/15 123/25 124/5 131/8 137/10 142/16 142/18 143/13 143/14 143/23 154/3</p> <p>correctly [2] 127/4 143/21</p> <p>correlate [1] 51/6</p> <p>corroborate [1] 85/6</p> <p>could [50] 8/12 11/15 17/16 21/22 22/1 22/3 23/1 23/10 28/25 37/22 38/15 39/12 39/22 40/10 40/17 42/6 51/14 52/4 54/13 55/18 58/9 59/4 66/23 70/15 76/7 76/19 77/9 77/21 83/14 86/11 87/10 87/16 92/20 93/7 107/3 107/17 107/17 115/23 118/3 118/4 119/19 124/6 124/9 125/4 134/8 134/24 135/2 148/17 148/18 151/19</p> <p>couldn't [7] 35/7 39/15 39/23 50/6 102/22 105/7 134/24</p> <p>counsel [5] 3/11 10/3 135/8 145/21 152/21</p> <p>count [1] 142/11</p> <p>counter [12] 76/14 76/16 99/25 100/13 105/4 118/1 118/19 129/16 129/17 129/21 135/13 136/6</p> <p>counter-clockwise [12] 76/14 76/16 99/25 100/13 105/4 118/1 118/19 129/16 129/17 129/21 135/13 136/6</p> <p>country [1] 68/17</p> <p>couple [5] 4/9 14/6 53/5 102/10 145/21</p> <p>course [5] 12/7 55/3 57/20 83/2 116/19</p> <p>courses [1] 34/11</p> <p>court [28] 1/1 1/23 3/17 7/24 9/23 12/3 13/4 13/15 19/11 19/19 52/19 55/7 56/24 61/5 65/5 65/11 74/17 89/24 90/17 93/11 96/7 96/15 97/1 127/22 130/12 144/11 154/1 154/8</p> <p>Court's [10] 14/24 29/18 50/20 65/4 65/6 80/3 81/3 84/18 91/24 93/24</p> <p>courtroom [1] 7/11</p> <p>cover [23] 2/11 3/17 85/25 86/8 86/10 89/24 90/6 91/16 91/19 91/24 93/16 97/22 101/25 104/14 105/15 118/9 127/17 128/21 132/11 144/1 144/19 148/22 149/5</p> <p>covered [1] 96/9</p> <p>CR [1] 3/3</p> <p>crash [25] 5/16 12/5 12/6 12/6 12/7 12/21 14/4 14/4 29/5 29/14 34/11 34/11 56/21 71/15 72/21 78/12 78/13 79/8 80/8 80/16 81/9 140/11 144/15 146/4</p> | <p>146/13</p> <p>crashes [4] 51/18 51/19 51/21 139/23</p> <p>create [6] 14/7 14/8 30/24 32/11 76/8 110/4</p> <p>created [5] 29/16 96/21 118/12 121/13 130/24</p> <p>creating [3] 14/13 98/4 127/14</p> <p>crime [3] 83/3 83/21 109/9</p> <p>criminal [3] 1/4 10/22 123/7</p> <p>criteria [2] 112/16 150/1</p> <p>critical [105] 6/4 11/25 13/5 14/17 14/18 15/4 15/25 16/2 16/25 17/9 17/13 17/17 17/20 25/23 26/21 28/21 28/22 30/23 39/7 41/1 41/12 41/24 57/17 57/24 58/1 58/7 58/8 58/15 58/20 59/5 59/16 76/1 76/5 84/20 85/1 86/17 92/6 92/21 92/23 93/18 93/25 94/2 95/18 95/18 95/19 96/11 97/11 97/17 97/23 98/2 98/6 98/13 98/21 99/2 99/6 101/11 101/15 102/6 103/8 103/16 104/21 105/5 106/4 106/8 106/9 107/1 107/6 107/7 107/13 108/10 108/22 108/25 110/16 110/24 111/4 111/11 116/6 119/17 120/3 120/4 120/6 121/8 121/18 121/22 125/13 125/18 127/5 127/9 128/4 131/19 132/6 133/7 133/13 133/14 136/10 137/1 138/23 142/15 142/17 143/9 143/14 143/19 145/25 148/1 148/11</p> <p>criticize [2] 137/7 137/9</p> <p>critique [1] 136/15</p> <p>cross [7] 2/4 6/16 10/10 50/23 79/20 128/12 128/19</p> <p>cross-examination [4] 10/10 50/23 79/20 128/19</p> <p>cross-examined [1] 6/16</p> <p>crossed [1] 38/15</p> <p>crosses [2] 119/6 141/14</p> <p>crossover [23] 29/25 38/14 38/18 38/20 42/4 105/20 111/16 117/6 119/3 120/21 120/25 121/3 121/4 133/22 134/4 134/6 134/8 138/25 143/2 143/3 143/6 143/10 143/12</p> <p>crucial [1] 131/3</p> <p>cruiser [3] 27/3 27/14 63/3</p> <p>cruisers [1] 45/16</p> <p>CSY [8] 9/25 13/11 20/22 47/22 84/25 110/24 122/8 127/20</p> <p>curb [11] 27/21 27/21 61/9 63/11 67/5 67/8 67/13 67/14 68/13 69/4 72/9</p> <p>curbing [5] 25/3 25/4 47/11 61/10 63/1</p> <p>curious [2] 54/7 55/23</p> <p>curriculum [2] 10/18 10/19</p> <p>curve [15] 28/23 29/8 31/2 31/6 41/5 41/6 41/11 41/16 41/18 42/2 74/20 74/24 103/20 105/4 131/19</p> <p>curved [15] 31/25 37/24 74/16 74/17 74/20 74/20 75/3 75/5 76/3 76/10 95/17 96/11 105/3 118/22 119/8</p> <p>curves [1] 119/9</p> <p>cut [4] 9/17 73/19 73/19 90/9</p> <p>cut-off [1] 90/9</p> <p>cutout [4] 105/18 107/19 117/4 117/5</p> <p>cutouts [1] 117/25</p> <p>cutting [1] 64/4</p> <p>CV [1] 92/3</p> | <p>D</p> <p>Daily [21] 12/20 37/25 39/5 40/3 42/17 42/17 42/23 43/9 53/7 53/18 77/18 77/20 78/6 79/7 79/10 86/14 100/23 106/17 110/12 111/9 112/9</p> <p>Daily's [4] 77/22 79/6 79/13 138/1</p> <p>damage [4] 51/12 62/17 75/21 94/17</p> <p>danger [1] 55/9</p> <p>dark [7] 24/14 72/6 95/14 95/14 95/20 141/13 141/14</p> <p>darker [3] 71/3 72/4 72/9</p> <p>darker-colored [1] 71/3</p> <p>data [31] 6/3 14/8 14/8 14/13 17/4 30/2 30/12 30/24 32/22 36/22 36/23 37/9 38/4 46/9 46/13 48/10 71/22 107/21 108/1 109/3 113/3 113/6 116/7 116/13 116/20 117/14 120/9 123/5 127/18 145/5 150/2</p> <p>date [6] 4/16 123/1 144/12 145/2 145/20 153/2</p> <p>dates [2] 145/21 152/20</p> <p>Daubert [2] 150/3 150/16</p> <p>day [4] 62/8 90/23 140/1 152/20</p> <p>daylight [3] 21/14 139/17 139/17</p> <p>days [1] 152/7</p> <p>dead [1] 52/2</p> <p>deadline [2] 144/24 145/14</p> <p>deadlines [1] 152/25</p> <p>deal [1] 145/21</p> <p>debris [6] 15/16 47/8 47/12 47/17 55/22 68/14</p> <p>deceased [1] 51/22</p> <p>deceleration [1] 74/12</p> <p>December [3] 150/23 153/10 153/11</p> <p>December 23rd [1] 150/23</p> <p>decide [3] 91/5 147/17 149/24</p> <p>decided [1] 74/17</p> <p>decision [1] 150/12</p> <p>deduce [1] 59/4</p> <p>defect [1] 132/14</p> <p>defend [1] 4/8</p> <p>defendant [10] 1/7 1/17 2/10 3/8 5/15 6/7 73/5 75/14 77/17 81/11</p> <p>defendant's [5] 31/22 54/10 69/16 83/9 83/21</p> <p>Defender [2] 1/17 3/10</p> <p>defense [21] 3/11 5/5 5/9 87/14 90/5 91/16 117/1 117/8 117/11 120/22 133/23 135/8 137/12 137/25 138/21 143/1 144/12 145/4 148/5 148/8 148/21</p> <p>define [3] 94/25 95/9 95/15</p> <p>defined [2] 105/8 110/1</p> <p>definitely [2] 51/21 51/21</p> <p>definition [5] 95/8 95/19 95/21 100/18 124/15</p> <p>definitions [2] 100/4 110/21</p> <p>definitive [1] 149/15</p> <p>definitively [1] 4/19</p> <p>degree [2] 65/1 66/12</p> <p>degrees [5] 11/9 11/9 100/19 108/9 108/10</p> <p>demonstrated [1] 4/7</p> <p>demonstration [2] 132/8 148/7</p> <p>denominator [4] 88/10 88/14 88/17 112/8</p> |
|---|--|---|

| | | |
|----------|---|--|
| D | 85/14 85/14 97/7 97/10 107/19 107/25 110/20 122/14 124/5 134/2 135/6 136/17 138/8 138/10 141/18 142/14 142/17 148/9 148/19 didn't [20] 12/23 16/18 32/7 38/6 38/9 39/10 44/7 45/11 48/12 48/18 54/25 102/1 116/1 134/15 136/2 136/7 137/4 137/19 140/11 141/23 difference [4] 43/20 94/4 95/24 108/6 different [23] 4/9 8/20 36/9 41/5 46/1 46/2 47/21 52/16 59/1 63/16 68/4 68/20 75/7 76/20 78/4 95/24 96/8 103/19 125/1 125/21 129/7 133/13 144/20 differential [1] 67/16 difficult [1] 70/18 dig [1] 138/13 digit [1] 43/16 digital [1] 19/12 digs [1] 63/12 dimensions [1] 36/23 diminishes [1] 67/9 direct [7] 2/4 56/15 58/6 76/10 92/18 109/17 135/24 directing [2] 35/9 35/12 direction [17] 23/6 60/21 80/20 95/23 95/24 105/10 108/7 118/16 119/13 119/16 119/23 125/8 129/7 129/8 129/14 130/16 132/18 directions [2] 105/3 118/2 directly [8] 9/3 19/2 27/20 62/10 64/7 92/20 100/2 141/9 dirt [5] 46/12 62/17 68/11 68/18 76/6 disagree [1] 139/24 disappeared [1] 65/2 disappears [1] 82/18 discern [1] 72/23 discernible [1] 102/22 disclosed [1] 55/6 disclosure [1] 3/23 discovery [4] 32/25 56/5 78/7 79/18 discuss [3] 52/21 52/21 52/23 discussed [7] 42/4 42/16 70/6 72/7 72/11 112/18 122/6 discussing [3] 42/18 80/6 87/5 discussion [4] 74/15 143/1 143/2 143/4 dispute [1] 6/1 disrespectful [1] 115/21 dissimilar [1] 121/19 dissipated [1] 135/4 dissipation [1] 126/18 distance [17] 33/21 33/23 35/7 96/1 100/24 100/25 101/2 102/25 108/13 113/17 114/3 114/4 114/7 114/10 117/18 126/8 126/24 distances [1] 104/10 distinctly [1] 7/24 distinguish [2] 25/23 95/13 DISTRICT [3] 1/1 1/1 1/1 disturbed [1] 62/17 ditch [1] 85/16 Divide [1] 106/15 divided [2] 93/2 93/8 divides [1] 69/13 DIVISION [1] 1/2 do [119] 6/14 6/23 7/10 7/23 8/3 9/1 9/1 9/13 15/10 16/10 16/16 16/18 19/18 | 19/22 20/1 21/1 22/15 25/15 26/15 29/1 29/21 30/22 31/11 31/19 31/19 34/8 34/15 35/13 35/14 36/17 37/22 39/7 39/9 39/12 39/18 39/22 39/25 44/7 44/19 45/6 45/13 46/21 48/12 51/2 51/17 52/19 53/8 55/15 63/18 64/4 65/16 66/19 67/23 69/21 71/16 73/10 74/24 79/21 81/6 83/5 85/14 85/25 86/15 86/17 86/19 86/20 86/22 89/24 89/25 90/2 90/12 90/23 91/5 91/7 94/23 95/25 96/19 97/17 99/6 101/5 101/7 101/16 103/8 103/9 106/2 107/20 107/22 108/15 111/10 113/15 114/13 114/18 120/3 122/2 122/13 122/20 122/23 126/15 127/12 127/15 127/19 130/2 130/5 134/24 135/23 136/14 143/4 144/8 144/10 147/18 148/19 151/7 151/20 151/25 152/1 152/5 153/1 153/2 153/14 document [8] 11/1 18/9 20/10 25/15 25/17 59/22 109/12 131/12 documented [5] 29/3 60/11 85/22 109/18 134/20 documenting [3] 25/13 110/23 115/12 documents [1] 53/16 does [33] 30/18 31/24 35/23 55/15 72/20 79/5 87/19 89/10 92/21 92/21 93/11 95/8 96/11 96/18 96/18 98/12 99/4 104/25 105/6 106/8 113/19 114/22 115/18 120/14 120/19 121/21 121/21 123/17 134/6 134/7 136/9 139/23 150/15 doesn't [13] 9/5 9/24 15/6 40/9 45/9 102/24 134/6 139/2 146/7 147/8 149/18 149/21 151/7 doing [13] 20/22 31/24 45/1 53/13 65/17 78/12 91/25 101/5 115/14 120/10 122/2 131/14 151/23 don't [68] 5/6 5/10 5/16 5/19 7/10 8/5 9/3 9/4 9/4 13/14 15/21 16/20 20/3 20/12 21/3 22/18 28/16 28/18 33/5 34/18 35/16 37/13 41/14 42/3 44/12 44/17 44/18 51/6 51/8 51/25 52/3 52/20 52/21 52/23 53/1 54/6 55/21 55/22 56/11 58/19 65/8 65/10 85/9 86/3 88/5 89/8 93/17 96/5 97/22 99/2 101/21 101/22 103/5 109/13 111/3 111/10 111/11 113/22 114/9 115/21 125/17 129/25 134/14 136/13 141/17 142/11 152/16 152/21 done [21] 14/12 35/23 45/20 45/22 46/18 84/11 90/2 90/13 90/13 90/20 90/22 91/4 93/19 102/4 112/17 132/8 138/14 138/17 140/7 144/17 151/12 dot [3] 114/23 114/23 131/5 dot-to-dot [1] 114/23 dots [5] 71/23 100/10 114/24 114/25 115/1 dotted [1] 69/12 doubt [1] 149/19 Doug [1] 3/9 DOUGLAS [1] 1/17 down [30] 8/1 8/1 13/14 27/7 36/9 41/7 44/21 49/8 60/5 61/14 64/4 85/15 85/18 85/21 88/22 93/11 94/8 94/13 100/2 101/14 127/13 131/7 132/7 132/19 |
|----------|---|--|

| | | |
|---|--|--|
| D down... [6] 139/25 140/8 140/9 140/10 144/3 146/14 downslope [1] 63/16 downward [1] 67/3 dozen [3] 13/18 14/6 14/14 drag [8] 31/8 44/1 44/23 45/14 45/22 47/13 122/6 124/17 dramatically [1] 49/8 DRAUGHON [4] 1/13 2/7 3/5 90/7 draw [4] 22/12 27/14 83/20 103/19 drawing [4] 32/15 81/23 107/22 114/23 drawings [2] 32/17 36/22 drawn [1] 121/5 drew [4] 28/2 118/18 137/17 137/21 drive [1] 142/12 driver [4] 28/6 67/18 100/9 131/14 drugs [1] 147/1 dry [4] 46/5 46/20 139/15 139/16 due [3] 36/16 94/17 102/24 during [8] 8/18 48/13 48/16 53/5 55/3 79/20 135/3 135/20 duties [1] 65/14 DWIGHT [2] 1/13 3/5 DXF [1] 107/21 dynamic [1] 77/10 dynamics [3] 75/11 134/18 134/19 | end [7] 70/17 95/14 95/14 98/11 123/17 140/13 151/15 ends [3] 68/11 73/23 75/5 energy [8] 48/12 48/16 125/24 126/10 126/13 126/17 127/7 135/4 engaged [1] 139/12 engaging [1] 138/22 Engineers [1] 110/9 enough [24] 9/4 15/3 34/15 38/9 53/17 69/8 69/12 96/22 96/22 98/22 110/3 111/10 129/23 130/3 133/19 133/20 138/17 140/22 149/11 149/19 150/24 151/1 151/13 151/20 entered [4] 73/1 76/6 135/14 136/6 entering [2] 61/19 135/16 entire [6] 15/14 35/25 44/21 79/11 79/12 126/21 entirely [1] 102/6 entitled [1] 154/4 ephemeral [1] 140/19 equal [5] 93/2 93/4 126/7 126/9 126/13 equation [3] 126/4 126/6 126/18 equipment [3] 13/23 33/13 36/13 equivalent [4] 63/3 126/23 127/16 135/3 error [5] 42/20 42/21 87/2 87/3 150/4 especially [2] 139/24 141/11 Esquire [3] 1/13 1/13 1/17 essential [3] 4/8 115/11 148/24 essentially [10] 26/14 36/21 45/16 45/19 71/24 96/23 110/16 111/12 114/22 138/12 establish [1] 85/1 established [1] 33/19 establishes [1] 149/3 estate [2] 98/22 133/19 estimate [3] 32/23 91/3 127/23 estimating [2] 47/25 48/16 et [4] 12/12 21/24 68/14 72/2 evaluate [3] 54/23 55/6 137/9 evaluating [2] 123/23 126/24 even [20] 6/24 41/11 54/25 55/10 59/2 90/19 93/24 93/25 101/15 104/15 105/6 111/3 125/17 129/2 129/21 133/6 142/16 143/20 147/16 152/20 evening [3] 64/15 128/21 128/22 event [1] 41/15 eventually [1] 23/18 ever [5] 33/1 40/11 41/14 44/18 116/5 every [13] 17/16 32/24 42/12 58/25 76/21 103/3 103/4 103/12 116/4 116/10 131/23 142/9 143/15 everything [6] 8/2 95/25 113/21 131/3 151/19 153/17 evidence [40] 5/15 15/4 15/18 18/23 25/13 39/8 39/24 50/7 51/25 54/16 55/1 55/13 55/21 55/25 58/15 58/21 76/7 86/9 92/7 95/5 99/2 99/24 103/7 109/17 113/25 114/16 114/21 115/12 134/19 135/1 139/6 141/16 142/14 145/13 146/5 146/9 146/22 147/12 148/1 149/25 evidentiary [1] 6/11 evidents [1] 136/18 exact [1] 69/1 exactly [9] 34/18 35/5 35/7 51/7 83/25 84/4 122/15 130/24 144/14 | examination [20] 6/21 7/20 8/18 10/10 50/23 52/24 53/5 56/15 56/22 58/6 71/14 79/20 84/15 92/18 97/4 97/7 116/13 128/19 135/25 142/24 examine [4] 17/10 18/13 85/14 85/14 examined [5] 6/16 71/10 85/20 85/20 86/1 examiner [2] 65/9 65/10 examining [1] 60/18 example [12] 5/12 25/24 42/24 46/2 48/12 58/9 59/2 68/10 79/8 94/5 119/13 119/21 examples [1] 79/5 exceed [3] 131/19 132/6 133/1 exceeds [4] 108/15 117/21 131/21 132/3 exchange [1] 107/22 excited [1] 140/1 exclude [1] 15/22 exclusive [1] 20/12 excuse [3] 44/14 126/12 148/8 excused [3] 89/5 91/15 144/6 exhibit [71] 8/12 10/16 10/16 10/17 10/21 10/21 23/9 23/25 25/2 28/25 29/21 31/22 37/22 38/16 38/23 39/1 39/4 42/5 42/6 56/24 58/4 59/23 60/9 61/5 62/1 62/3 62/21 63/6 63/19 63/23 63/23 63/25 64/1 64/2 65/25 66/2 66/5 71/19 81/17 107/3 107/17 107/18 109/20 110/11 110/12 111/17 111/18 111/20 111/21 111/25 116/23 117/1 117/3 117/8 117/16 118/3 118/4 118/12 118/24 119/10 119/11 119/19 119/19 134/3 134/3 137/13 137/13 137/25 137/25 138/21 143/1 exhibits [24] 3/13 10/15 11/18 11/21 19/10 20/8 20/18 21/23 21/23 53/8 87/14 97/2 117/9 118/5 118/10 119/24 120/2 133/23 137/12 145/18 148/3 148/3 149/4 152/12 exit [16] 64/19 66/5 74/4 74/5 74/7 74/13 82/4 82/10 82/11 82/15 82/18 83/11 83/12 83/15 84/1 84/2 expect [4] 16/17 28/22 121/11 151/12 expected [1] 52/16 expelled [2] 146/10 146/20 expensive [1] 114/23 experience [10] 4/24 5/4 5/5 6/12 7/25 75/25 78/2 78/17 80/11 80/24 experiences [1] 14/15 expert [15] 3/16 3/22 4/21 5/5 6/23 54/21 55/1 55/2 123/22 125/14 144/13 144/15 144/22 144/24 145/1 expert's [1] 55/7 expertise [1] 150/7 experts [8] 3/19 4/1 4/5 4/15 6/13 7/1 55/4 145/3 explain [10] 9/9 9/10 56/24 74/17 92/20 94/4 96/7 110/13 112/23 126/1 explanation [3] 9/11 9/12 9/13 export [1] 107/21 exposure [1] 79/13 express [1] 92/12 expressed [4] 5/8 6/5 55/25 87/25 extend [1] 145/2 extended [1] 144/14 extent [2] 65/18 145/7 |
| E each [19] 3/24 4/1 6/13 11/10 13/14 26/25 36/5 36/13 59/10 69/10 103/21 111/18 112/1 113/23 115/2 127/13 127/15 147/21 147/23 earlier [9] 41/16 44/1 54/1 74/15 97/14 108/21 108/24 115/16 145/6 early [7] 122/18 138/4 138/5 138/6 140/2 140/2 152/24 earth [1] 113/22 easier [1] 122/16 eastbound [2] 74/4 74/6 easy [1] 70/24 eccentric [1] 125/9 edge [11] 62/18 102/18 104/23 105/11 105/11 105/13 110/1 120/10 120/16 141/12 141/15 edges [3] 94/24 95/6 130/17 education [1] 4/25 effects [1] 5/14 eight [4] 10/16 10/21 88/10 88/14 eighth [7] 43/11 79/9 88/5 112/11 112/15 127/11 138/9 eighths [1] 43/6 either [11] 6/20 18/12 43/23 54/21 71/3 105/5 133/17 149/3 149/4 149/17 150/14 ejected [1] 50/11 electronic [2] 113/1 113/12 electronics [3] 33/10 113/13 113/18 Eleven [1] 80/10 Elmo [1] 56/7 else [5] 18/12 33/11 49/24 70/9 109/13 else's [1] 111/2 embarrassed [1] 115/25 EMS [1] 21/8 encouraged [1] 41/8 | | |

| | | |
|----------|--|---|
| E | figures [1] 88/5 file [2] 32/11 107/22 filed [2] 145/18 148/2 files [1] 36/21 filing [1] 8/20 filings [1] 149/4 filling [1] 72/1 filmy [1] 71/4 final [5] 62/5 71/21 80/19 86/4 135/5 finally [1] 128/4 find [12] 15/18 17/16 28/22 36/15 40/10 40/17 50/6 92/25 99/7 103/6 151/1 151/19 finder [2] 127/22 146/6 finding [3] 50/10 50/12 88/19 fine [3] 16/20 19/18 33/16 finish [3] 52/24 110/20 128/9 finishing [1] 96/7 fire [1] 21/8 firing [1] 7/9 first [43] 11/1 13/7 13/17 21/8 25/14 31/11 33/1 41/10 45/3 62/20 72/22 84/25 88/8 88/9 88/10 88/18 88/18 91/20 93/1 94/10 97/16 98/17 111/15 116/2 120/19 120/20 121/6 121/8 121/10 121/17 122/7 123/24 125/1 131/22 133/25 134/6 143/3 143/6 143/11 143/13 143/22 144/23 146/17 fit [1] 69/20 fits [1] 99/12 five [14] 37/22 39/4 46/11 52/16 62/21 66/23 78/15 78/17 84/9 90/19 91/4 110/11 128/17 128/17 five feet [1] 66/23 fixed [1] 36/17 flat [2] 67/5 130/8 flexibility [1] 86/21 Florida [1] 12/17 focus [5] 6/6 92/5 92/15 147/19 152/13 focuses [1] 6/2 focusing [2] 25/21 60/12 foliage [2] 62/12 63/16 follow [10] 11/18 19/1 39/2 50/19 61/15 62/15 63/4 63/14 72/3 148/22 follow-up [2] 39/2 50/19 following [3] 48/20 85/15 153/12 follows [1] 6/14 foot [3] 32/3 43/10 130/9 footnote [3] 112/13 138/11 138/17 force [13] 44/24 93/4 96/23 100/16 100/17 100/17 110/17 125/7 125/8 131/21 131/24 132/1 132/3 forces [2] 122/21 126/9 forefront [1] 64/8 foregoing [1] 154/2 forget [1] 79/10 form [1] 71/23 format [1] 52/16 former [1] 65/15 formula [41] 17/1 17/3 17/4 17/7 29/4 37/4 37/11 37/20 39/18 41/25 44/2 59/6 59/7 59/17 81/7 81/9 81/10 87/7 87/9 87/19 87/22 87/23 87/24 88/9 88/18 92/6 93/6 93/8 93/17 93/25 107/8 107/13 115/14 126/2 127/11 127/20 128/4 137/1 148/12 148/25 149/5 | formulas [5] 59/1 59/10 79/14 92/10 148/23 forward [5] 53/23 60/20 66/15 80/19 80/20 found [8] 30/23 37/12 49/20 50/6 104/11 114/12 123/2 141/11 foundational [1] 149/25 four [7] 31/22 62/1 62/4 66/23 109/20 138/1 138/21 Fourteen [1] 136/21 Fourth [1] 10/3 foxtrot [1] 23/25 frame [1] 67/3 free [7] 9/1 26/19 57/19 60/20 61/22 110/22 122/22 free-spinning [4] 26/19 57/19 60/20 61/22 fresh [3] 62/14 62/17 110/1 friction [36] 31/8 31/10 41/2 44/1 44/11 45/2 45/25 46/2 46/5 46/6 47/13 47/16 47/19 59/3 67/16 68/4 75/8 76/19 81/6 94/8 94/13 121/9 121/19 122/6 122/9 123/2 124/10 124/13 124/15 124/24 126/8 130/3 132/22 132/23 140/15 140/23 frictional [1] 131/21 frictions [1] 46/17 front [41] 9/5 11/3 27/1 27/2 27/13 28/6 33/4 35/22 38/21 42/13 63/3 63/21 64/11 64/11 66/11 67/18 67/18 76/15 76/15 77/5 78/25 80/18 100/3 100/24 102/19 106/14 108/13 108/14 111/17 116/17 116/21 118/10 119/14 119/14 119/22 120/13 120/17 121/11 139/1 143/17 153/7 full [4] 21/22 98/15 134/18 134/19 fully [1] 122/1 function [3] 22/14 91/6 112/24 functions [1] 59/11 fundamental [3] 14/16 104/16 122/3 Fundamentals [1] 12/21 furrow [2] 27/7 62/19 furrows [6] 61/13 61/15 62/2 63/12 63/12 141/20 further [17] 5/21 24/25 25/4 49/16 50/23 64/8 81/14 84/8 88/21 101/14 128/7 134/2 142/21 143/25 144/22 144/22 146/12 fuse [1] 132/15 future [1] 53/22 |
| F | face [1] 7/11 faced [2] 39/14 39/23 facility [1] 85/18 facing [3] 60/1 69/7 135/18 fact [26] 15/2 17/9 18/16 44/1 51/5 54/9 54/18 65/9 70/11 87/19 93/7 96/18 99/11 104/21 104/25 110/15 111/2 112/17 117/2 117/25 121/16 127/22 139/25 143/14 146/6 146/12 factor [5] 31/8 44/2 47/13 124/17 128/13 factored [1] 81/12 factors [6] 75/5 75/7 76/19 80/14 81/12 150/3 facts [7] 6/3 55/1 92/13 148/7 149/7 150/2 150/3 factual [7] 4/6 51/1 54/21 54/22 54/23 55/24 65/23 fade [1] 25/16 failing [1] 48/20 faint [1] 72/24 fainter [1] 30/8 fair [17] 15/6 21/7 21/17 30/17 30/19 40/25 53/17 78/14 88/13 90/24 93/24 104/18 117/19 123/24 143/18 145/9 147/16 fairly [1] 117/23 fall [1] 149/7 familiar [10] 12/1 12/14 12/15 12/19 36/7 38/1 42/22 43/9 56/21 135/10 famous [1] 102/1 far [12] 16/12 21/16 35/4 44/22 71/16 83/7 103/22 116/8 116/18 146/2 149/11 151/13 fashion [2] 5/18 147/13 fast [4] 7/25 131/15 131/16 131/20 faster [2] 26/15 104/9 fatal [2] 48/22 49/5 fatality [3] 51/19 80/8 80/16 favor [1] 7/23 feature [1] 33/15 February [3] 13/9 14/1 14/11 February 2018 [1] 14/11 Federal [2] 1/17 3/10 feel [2] 26/12 29/13 feeling [1] 26/13 feet [22] 66/23 67/5 77/16 77/21 77/22 79/4 87/25 93/13 104/12 106/20 106/20 106/20 106/22 108/13 116/12 116/21 116/21 116/22 117/18 117/19 117/19 117/19 fender [1] 71/1 few [4] 13/17 20/13 93/1 142/9 field [5] 18/8 32/22 55/4 94/6 103/23 figure [6] 29/4 29/14 30/6 134/15 134/21 152/14 | G G-forces [1] 122/21 game [2] 145/9 147/16 gather [1] 49/19 gave [3] 101/15 135/8 138/10 general [6] 9/23 23/1 30/3 30/13 96/9 120/2 generality [1] 20/6 generalized [2] 37/8 37/23 generally [10] 16/25 17/18 21/9 47/24 92/14 107/18 117/2 118/5 148/14 150/6 generated [1] 32/18 generation [1] 58/10 generic [1] 109/21 gentlemen [1] 66/6 |

| | | |
|---|--|--|
| G geometric [1] 33/20 geometry [7] 103/17 103/23 104/22 110/4 115/13 117/24 119/7 get [62] 6/8 6/17 7/3 7/4 7/12 7/20 8/5 16/19 22/17 22/18 23/19 24/24 25/15 36/19 38/5 39/6 41/8 44/23 52/24 73/25 75/12 83/12 83/13 83/14 88/7 89/12 89/15 89/19 90/2 90/3 90/12 90/13 90/19 90/25 91/13 92/16 93/5 93/5 93/11 96/10 97/22 101/24 104/15 113/17 118/6 121/25 122/19 126/16 127/16 128/9 128/12 128/14 145/11 146/1 147/22 150/24 151/5 151/7 151/7 151/13 152/9 152/10 gets [2] 145/24 147/18 getting [3] 68/7 145/4 145/5 Giant [1] 71/1 give [16] 6/22 9/12 55/7 56/10 85/23 86/21 121/17 138/14 145/10 146/18 147/7 147/24 150/13 150/25 151/13 151/20 given [6] 5/6 8/17 39/22 131/19 132/6 144/12 gives [2] 26/10 130/18 giving [2] 9/9 35/16 glass [1] 114/5 go [40] 6/13 7/2 7/13 8/5 8/14 10/7 11/8 22/21 23/10 24/10 26/23 27/7 30/8 49/8 56/20 65/25 66/15 71/24 73/5 75/5 84/14 84/18 91/6 96/3 98/23 98/24 103/11 118/4 130/7 131/20 131/22 132/4 132/7 133/20 137/11 139/5 140/6 152/6 153/4 153/17 goes [6] 5/6 6/6 50/4 99/8 147/18 149/20 going [94] 3/25 5/2 6/20 9/17 10/5 11/24 23/13 24/1 28/2 28/3 28/10 29/25 31/1 38/24 40/10 41/17 46/4 46/11 46/17 46/24 50/16 52/20 53/19 55/10 55/19 55/20 56/2 56/19 57/19 58/3 60/7 61/4 61/14 61/15 61/24 61/25 62/9 62/18 63/2 63/22 65/3 67/20 72/15 75/14 75/23 82/13 83/19 90/19 92/3 96/5 97/15 99/23 100/18 102/17 103/3 103/22 104/25 118/4 120/18 123/10 124/12 125/7 125/9 129/2 129/14 130/20 130/25 131/1 131/16 131/18 131/22 132/5 132/18 137/12 141/9 142/9 144/7 144/25 145/2 145/2 145/11 145/14 146/1 147/5 149/15 149/16 150/14 150/17 150/20 151/4 151/8 151/21 151/22 152/9 gold [1] 39/9 golf [1] 22/2 gone [3] 10/2 34/12 119/24 good [12] 3/9 9/5 10/12 56/17 84/17 128/21 128/22 138/16 140/25 141/2 148/22 151/7 gore [1] 74/6 got [28] 10/15 11/14 23/12 25/19 30/15 37/15 40/12 40/20 40/23 42/1 43/3 46/21 58/24 59/13 68/16 68/20 75/16 75/19 93/11 98/8 103/11 130/9 144/14 145/1 146/10 146/10 146/13 146/15 | government [22] 1/13 2/3 3/6 5/9 5/17 7/6 7/14 10/3 16/14 55/10 60/8 63/18 63/24 64/2 65/23 81/20 87/5 89/10 145/5 145/11 147/8 149/2 government's [15] 4/21 56/23 58/4 59/23 61/5 62/1 62/3 62/20 63/6 63/23 64/1 71/19 144/24 144/25 145/13 grade [3] 68/21 124/16 127/11 graphic [2] 104/10 147/24 grass [5] 46/6 62/19 63/12 68/11 74/7 grassy [3] 61/14 68/9 82/17 gravel [5] 47/12 68/6 68/14 68/17 68/18 graveling [1] 47/10 gravelly [2] 47/17 68/3 gravity [3] 18/5 18/6 59/4 gray [1] 70/23 great [1] 133/20 greater [6] 100/25 101/3 104/12 106/17 108/16 112/5 greatest [2] 6/1 121/9 green [10] 108/12 118/18 119/2 119/4 119/5 119/14 137/11 137/17 137/21 137/23 Greenbelt [3] 1/6 1/15 1/18 GRIMM [1] 1/10 Grimm's [1] 72/3 ground [1] 62/11 grow [2] 42/21 87/2 growing [1] 51/24 guess [6] 9/3 24/8 35/25 75/18 103/11 105/9 guidance [1] 109/11 guidelines [2] 96/12 105/13 guides [1] 12/9 gun [1] 122/14 gutter [6] 63/1 63/11 67/14 68/8 68/15 69/3 | 34/12 44/17 45/1 46/5 46/16 47/12 52/14 56/23 58/3 59/23 61/4 61/25 65/12 67/5 68/18 71/1 74/7 87/21 89/24 98/14 98/15 100/20 105/19 106/19 107/21 109/10 114/17 116/2 122/25 139/6 142/8 145/14 146/17 150/4 150/6 150/9 hash [1] 97/23 hasn't [1] 144/17 hat [1] 7/22 hate [1] 131/3 have [222] having [6] 3/19 5/3 16/15 50/3 127/14 147/10 Hazel's [1] 10/4 he [82] 3/18 4/24 5/1 5/1 5/3 5/23 5/23 5/24 6/15 6/19 34/11 34/12 34/17 35/1 35/10 42/24 52/14 53/5 55/15 55/25 62/24 65/12 65/12 65/13 65/17 65/18 65/19 65/19 72/7 73/8 73/11 77/21 79/8 88/25 89/1 89/15 98/19 102/8 102/11 102/15 102/22 104/11 105/19 111/9 112/14 112/15 114/15 114/16 114/16 114/17 114/17 116/1 116/15 120/9 120/10 120/13 123/25 124/5 124/7 133/25 134/2 136/5 137/21 138/8 138/10 138/10 138/11 138/15 138/16 141/22 141/24 143/12 144/17 144/20 145/7 146/4 147/7 147/18 148/19 148/22 150/18 153/14 he's [21] 10/2 10/5 34/13 39/2 55/20 105/9 105/11 105/11 111/12 118/9 138/12 138/19 144/18 146/1 146/24 146/24 146/25 147/5 147/14 147/14 148/22 head [1] 52/2 heading [1] 66/4 headlamps [1] 95/22 headlights [3] 108/8 129/6 129/12 hear [18] 4/1 4/5 7/23 7/24 11/10 11/14 12/23 56/11 126/7 130/12 137/19 141/18 141/23 145/17 149/2 149/23 151/2 153/16 heard [16] 32/25 33/1 39/11 41/14 65/9 65/14 81/25 96/15 97/14 98/10 102/10 109/5 112/21 115/16 125/20 142/14 hearing [6] 3/18 4/14 7/23 11/20 11/21 144/22 hearings [1] 3/4 hearsay [1] 65/4 heaviest [1] 121/9 held [1] 12/7 Hello [1] 10/13 help [11] 3/13 3/21 6/9 29/4 30/6 45/3 55/6 58/5 96/7 99/18 150/13 helpful [4] 18/15 146/6 146/19 153/20 helps [2] 91/4 94/25 hence [2] 101/4 131/12 her [20] 3/12 16/18 52/5 64/21 64/22 64/24 65/1 81/1 82/25 83/10 83/24 85/4 85/5 85/5 85/10 85/11 85/12 128/12 151/21 151/23 here [60] 3/3 4/15 4/16 8/4 11/5 11/7 11/7 20/13 23/12 23/13 24/2 27/3 29/7 29/12 29/13 30/4 30/9 30/18 30/23 31/15 31/24 35/16 36/9 42/11 42/18 |
| | H had [57] 5/3 12/12 13/10 14/2 14/12 14/12 14/21 20/10 20/16 28/15 28/15 32/8 32/25 34/9 34/10 36/4 42/4 42/5 44/18 46/2 47/3 47/3 47/5 47/16 47/17 48/8 49/12 51/4 51/10 51/21 52/1 54/10 71/17 77/4 81/25 85/5 85/6 85/9 85/11 86/7 95/9 97/11 102/5 107/22 112/25 113/1 117/5 127/4 130/22 136/1 141/11 144/11 146/17 146/21 147/12 151/18 152/20 half [11] 69/7 101/3 104/7 106/18 106/20 106/22 108/16 126/10 126/14 141/6 141/7 halfway [2] 43/19 43/21 hallmark [2] 38/22 57/17 hammer [1] 140/4 hand [7] 7/12 24/15 40/3 68/21 83/10 85/8 85/9 handled [1] 51/18 handling [2] 6/20 6/21 handout [1] 40/18 hands [3] 103/10 139/7 149/23 happen [2] 125/2 125/4 happened [4] 51/4 60/17 64/17 83/23 hard [3] 119/3 121/24 127/12 has [50] 3/23 5/3 5/5 5/17 6/7 8/1 8/19 15/3 19/19 22/14 28/9 33/10 33/15 34/9 | |

| | | |
|--|---|--|
| H | 120/18 124/9 128/12 129/21 130/15 138/25 139/4 147/22 151/4 151/10 151/12 | important [19] 3/20 4/1 18/8 31/1 84/24 91/5 94/6 99/6 109/12 110/13 110/23 112/3 112/4 114/14 115/8 123/7 149/13 151/1 152/13 |
| here... [35] 48/17 53/2 55/25 59/24 60/23 61/6 62/3 62/21 63/7 66/1 71/20 73/14 78/7 82/2 82/19 84/24 89/25 90/16 91/4 92/5 93/9 96/15 112/17 120/1 120/23 123/15 127/2 127/17 128/5 128/16 130/8 130/10 131/23 145/23 145/25 | However [5] 13/17 30/5 38/8 94/23 122/18 | imported [2] 108/3 117/13 |
| here's [4] 90/11 144/8 145/16 152/5 | human [1] 26/15 | impossible [1] 119/18 |
| herring [1] 146/4 | hundred [2] 90/12 133/2 | imprecision [1] 88/13 |
| Hewlett [1] 113/2 | hundreds [1] 140/7 | improper [3] 120/5 125/22 136/25 |
| Hewlett-Packard [1] 113/2 | I | in [508] |
| higher [3] 52/6 64/8 110/19 | I'd [17] 3/12 3/16 7/10 26/23 30/22 30/23 42/5 65/15 89/12 90/15 109/3 136/15 151/23 152/5 152/5 152/6 152/7 | inadmissible [1] 55/5 |
| highway [1] 102/13 | I'll [11] 9/13 9/22 19/11 46/19 48/20 71/18 94/10 152/10 152/10 153/9 153/13 | inappropriate [5] 107/9 107/10 122/4 125/12 127/21 |
| him [17] 16/23 19/2 19/2 35/9 35/12 35/16 73/7 89/8 89/9 102/24 115/25 121/25 137/23 144/16 144/17 150/20 153/14 | I'm [83] 3/11 4/19 7/25 8/6 10/1 10/21 11/16 11/18 12/23 16/10 16/10 16/22 20/6 20/8 21/23 22/8 22/9 24/10 24/11 24/12 24/21 27/9 28/6 30/8 36/9 38/24 39/25 40/8 42/8 45/3 46/10 48/14 53/19 55/19 55/22 56/2 56/19 58/3 60/7 61/4 61/15 61/21 61/25 63/22 65/3 66/1 69/6 75/4 75/4 75/18 78/3 78/22 83/13 86/24 89/25 90/12 90/18 90/22 91/20 96/9 97/15 101/8 101/22 101/25 103/14 110/5 115/25 115/25 118/4 137/12 137/19 137/25 138/5 141/23 145/2 145/2 145/11 145/14 146/2 149/9 149/9 151/8 152/9 | inch [13] 27/17 42/25 43/6 43/6 43/11 79/5 79/9 86/22 95/20 112/11 112/12 112/16 138/18 |
| hip [1] 100/9 | I've [13] 28/25 41/14 46/18 46/23 51/18 59/24 92/2 92/3 108/14 112/25 113/1 138/12 140/7 | inches [10] 37/20 42/19 43/2 43/4 79/4 87/1 87/25 88/4 112/6 138/9 |
| hire [1] 144/17 | I-N-D-E-X [1] 2/1 | incident [3] 10/22 34/10 42/24 |
| his [55] 4/25 5/3 5/8 5/22 5/24 6/19 8/10 19/19 35/10 42/23 53/8 54/6 55/15 55/18 55/18 55/24 55/24 65/14 65/18 65/20 65/20 79/7 79/7 89/15 98/19 101/18 102/8 104/22 105/7 105/9 105/18 105/19 107/25 111/9 116/19 117/6 117/13 117/15 120/9 121/7 121/22 123/18 124/2 124/6 143/15 143/15 143/16 144/21 145/8 145/8 146/6 147/5 147/6 149/6 149/23 | ice [1] 26/12 | incidents [1] 147/25 |
| hit [2] 51/7 52/2 | idea [1] 3/25 | include [5] 55/25 76/25 77/13 123/17 150/15 |
| hmm [4] 27/19 67/1 81/19 82/3 | ideal [1] 32/2 | including [1] 131/23 |
| hold [3] 97/21 98/24 99/13 | ideally [2] 31/17 152/7 | inconceivable [2] 5/21 55/17 |
| holding [1] 33/6 | identifiable [1] 103/15 | inconsistently [1] 145/8 |
| holds [1] 33/11 | identified [5] 25/7 25/21 97/3 110/11 120/24 | incorporated [1] 83/2 |
| holdup [1] 145/4 | identifies [1] 147/24 | incorrect [1] 75/18 |
| HOLLIS [2] 1/13 3/5 | identify [5] 21/25 23/23 26/24 41/23 97/17 | indeed [3] 19/11 84/21 86/25 |
| home [1] 103/11 | identifying [2] 26/24 27/4 | indentation [1] 86/10 |
| homicide [1] 147/15 | if [238] | independent [1] 65/13 |
| Honor [37] 3/4 3/9 4/11 7/6 7/7 8/11 9/21 10/9 11/17 11/22 16/12 22/25 49/16 50/19 52/15 54/1 56/12 65/3 81/14 84/9 84/13 88/23 89/23 90/8 91/9 92/17 128/15 129/9 130/13 132/9 132/9 142/21 144/2 144/10 145/15 153/3 153/6 | illustrate [3] 99/19 130/4 130/22 | independently [1] 65/11 |
| Honor's [1] 9/22 | illustrated [1] 110/17 | indicate [9] 22/3 36/4 57/16 60/7 60/16 106/1 106/1 112/4 116/23 |
| HONORABLE [1] 1/10 | illustrates [2] 38/17 104/11 | indicated [16] 20/15 38/24 38/25 47/2 54/2 60/23 62/2 70/13 98/19 101/16 111/21 120/1 133/17 134/10 143/2 143/10 |
| hopefully [2] 22/18 115/5 | illustration [4] 30/13 31/23 138/14 138/16 | indicates [9] 41/24 97/23 105/5 105/7 106/11 111/9 111/15 136/12 141/25 |
| horizontal [4] 100/11 113/14 114/1 114/3 | image [9] 23/4 56/25 59/25 60/24 61/9 72/20 73/18 73/22 75/13 | indicating [2] 72/15 130/21 |
| hot [1] 91/12 | images [4] 56/20 62/20 97/14 102/12 | indication [1] 121/17 |
| hotel [1] 25/2 | imagine [2] 69/6 146/22 | indicative [3] 42/14 57/19 61/22 |
| hour [8] 64/23 75/19 75/23 81/13 90/21 93/14 141/6 141/7 | imbalance [4] 47/19 124/24 125/5 125/16 | indicia [1] 50/7 |
| hours [1] 142/10 | impact [11] 15/11 15/23 15/24 16/2 54/9 54/13 76/17 77/6 83/22 94/17 133/19 | individual [2] 4/4 109/8 |
| how [67] 6/10 6/19 7/3 12/4 13/10 14/1 14/11 20/1 25/22 29/25 35/4 35/12 35/13 39/5 42/3 43/20 44/22 45/1 45/6 45/24 46/14 46/18 46/18 48/7 51/8 51/9 51/18 54/17 56/18 61/18 69/6 71/16 71/25 73/23 75/5 75/8 75/11 75/25 76/5 77/6 77/10 77/11 77/15 77/20 79/5 80/8 93/20 111/17 112/1 114/10 116/8 116/14 116/18 116/18 117/9 117/22 | impacted [6] 15/17 70/3 70/7 70/14 70/20 80/8 | individuals [1] 139/5 |
| | impacting [1] 63/15 | indulgence [3] 29/18 80/3 81/3 |
| | impacts [2] 51/9 75/23 | industry [5] 117/17 117/21 122/18 123/19 126/17 |
| | impending [1] 140/22 | inference [1] 70/18 |
| | import [2] 107/25 114/24 | inferences [2] 51/14 147/11 |
| | importance [2] 100/22 101/5 | inform [2] 150/3 150/12 |
| | | information [9] 4/5 7/4 31/1 32/7 54/13 54/17 55/5 145/4 146/8 |
| | | ingrained [1] 51/23 |
| | | initial [13] 101/14 111/16 120/21 121/3 121/4 121/5 121/6 121/14 127/16 134/17 140/21 141/25 144/25 |
| | | initially [6] 12/5 36/19 78/13 80/18 119/3 119/7 |
| | | initials [1] 26/1 |
| | | injured [1] 50/11 |
| | | injuries [2] 50/17 146/21 |
| | | inner [1] 120/10 |
| | | inquire [1] 9/22 |
| | | inserted [1] 143/16 |
| | | inside [10] 35/2 35/17 49/7 50/1 52/5 80/21 81/1 105/11 115/9 115/18 |

| | | |
|---|---|--|
| <p>I</p> <p>installed [1] 81/1 instance [2] 38/8 38/11 instead [1] 54/12 institute [2] 12/15 12/15 instructed [1] 40/15 instruction [1] 35/17 instructions [1] 9/22 intend [1] 151/10 intended [1] 127/9 intending [1] 82/23 interest [1] 54/2 interface [2] 124/15 132/20 interference [1] 25/16 Internet [2] 37/12 37/15 interrupt [1] 16/23 intersect [1] 100/12 interstate [2] 68/10 68/12 interval [1] 127/13 intervals [1] 126/22 interview [1] 85/3 interviews [1] 49/23 into [53] 17/4 17/7 23/8 24/1 27/7 33/23 36/20 47/15 56/20 59/20 61/19 62/9 63/4 63/12 63/14 63/17 65/2 65/16 65/20 67/20 72/9 72/15 73/1 74/10 75/5 80/11 83/2 92/4 93/20 94/8 94/13 96/10 98/23 104/14 107/25 111/13 114/24 117/13 126/20 126/22 130/11 131/15 131/18 133/17 133/21 135/13 136/5 140/5 141/20 142/2 142/4 143/16 151/3 into as [1] 96/10 intrusion [1] 51/12 invention [1] 95/8 investigating [1] 140/11 investigation [7] 5/1 15/10 65/14 86/5 137/10 146/2 147/6 investigator [3] 3/12 5/25 12/6 involve [2] 45/16 146/7 involved [1] 62/6 involves [3] 17/1 48/15 147/22 IPTM [1] 46/16 irrelevant [1] 102/7 is [533] ish [1] 151/16 isn't [5] 15/3 42/11 47/22 139/15 143/11 issue [13] 4/13 6/2 6/4 6/17 42/4 42/22 52/21 145/22 145/23 145/25 147/17 149/12 150/15 issues [2] 54/9 75/9 it [422] it's [144] 3/25 5/2 5/21 10/15 11/5 15/6 18/8 20/13 21/7 21/7 21/17 23/16 27/24 30/3 30/17 33/13 33/13 35/21 36/20 36/21 37/25 38/4 38/25 38/25 39/1 40/25 41/8 41/16 41/18 42/18 45/5 46/4 46/7 47/23 50/8 51/16 51/24 52/8 52/8 52/9 52/18 57/16 57/24 60/4 60/23 61/11 64/4 67/3 67/13 68/8 68/9 68/10 68/11 68/16 68/18 68/24 69/1 69/20 70/24 73/19 74/20 75/8 76/15 76/22 87/16 88/13 88/20 89/6 90/18 90/19 92/25 94/10 94/10 98/1 98/5 99/21 99/23 100/7 100/9 100/14 100/20 101/6 104/5 104/18 105/5 106/18 110/1</p> | <p>110/13 110/22 111/18 112/4 112/8 113/1 113/12 115/11 120/12 122/4 122/9 122/10 122/22 122/23 123/4 124/12 125/12 125/20 125/21 126/3 127/8 127/10 127/11 127/11 127/12 127/14 129/3 129/3 130/20 131/2 132/22 133/6 133/7 133/10 134/1 134/18 136/11 136/25 138/23 139/4 139/15 139/16 139/17 140/17 141/3 141/5 141/9 141/11 145/1 146/5 146/6 148/5 149/16 150/14 150/17 150/23 151/15 item [1] 10/19 its [9] 54/10 77/6 87/1 99/23 100/14 129/17 135/17 135/18 141/8 itself [11] 37/8 47/14 76/20 85/15 87/17 99/3 102/24 111/6 129/5 135/3 148/4 lvy [1] 1/18</p> <p>J</p> <p>January [8] 4/16 4/17 80/10 151/16 151/16 151/20 152/20 153/10 jigs [1] 101/5 JOHN [4] 1/13 12/20 138/1 138/12 joined [1] 3/11 Jon [1] 40/7 JR [1] 1/13 judge [7] 1/11 9/6 10/4 72/3 149/21 149/25 153/7 judgment [1] 35/10 jug [1] 121/25 jump [1] 92/3 jury [5] 9/5 55/6 146/19 149/23 153/8 just [133] 8/12 9/1 9/6 9/17 10/1 10/16 10/17 10/25 16/10 16/11 19/22 20/6 22/18 23/1 23/15 24/6 24/8 24/12 24/24 25/21 29/16 30/3 30/13 31/23 33/8 33/25 36/6 37/2 37/14 39/12 39/22 40/8 40/22 43/7 43/13 43/20 43/22 45/1 45/2 46/10 46/12 46/17 46/19 46/23 46/24 50/1 50/19 50/21 50/25 51/15 51/23 51/24 52/1 52/9 53/4 53/19 54/5 54/7 59/15 62/1 62/13 64/19 66/4 66/5 66/22 68/11 68/18 68/24 69/22 70/5 72/24 73/23 76/9 79/10 82/24 84/6 84/18 85/3 85/23 87/5 87/10 88/5 89/3 89/5 90/8 91/12 93/7 93/14 94/10 95/4 96/10 98/1 101/8 101/24 102/4 102/12 103/1 104/6 104/8 104/15 106/23 108/14 112/7 112/8 113/2 113/23 114/9 114/18 114/23 114/23 115/14 115/16 116/21 117/9 119/21 119/24 121/16 121/25 122/20 123/11 126/15 127/14 129/15 129/19 130/8 133/12 134/25 136/11 140/11 142/23 144/18 152/11 153/6</p> <p>K</p> <p>keep [3] 7/23 11/14 131/3 kept [2] 40/14 81/1 key [7] 17/10 44/2 92/5 107/23 109/17 145/25 147/25 kicked [2] 62/17 68/7 kicking [1] 26/13 kids [1] 128/14 Kimberly [1] 3/12 kind [9] 37/2 51/25 62/24 68/7 70/25</p> | <p>71/4 74/7 122/5 141/12 kinetic [2] 126/10 126/13 knew [1] 115/24 know [68] 4/17 7/20 8/22 9/4 9/19 10/2 16/10 16/12 16/15 16/16 20/1 21/16 22/1 24/21 33/22 34/8 34/15 35/5 40/1 42/3 43/13 46/18 46/21 50/4 54/25 55/21 55/22 61/18 68/17 68/23 71/2 71/16 75/9 75/25 76/5 83/7 84/3 88/5 100/7 101/6 109/11 112/10 112/12 113/22 115/12 115/14 115/23 115/24 116/1 121/24 122/9 122/14 122/23 123/8 123/24 124/20 128/13 132/25 133/1 134/14 138/12 142/11 151/14 152/10 152/11 152/17 153/1 153/12</p> <p>knowing [1] 50/10 knowledge [4] 4/24 20/4 21/3 45/10 known [10] 17/13 25/24 33/22 45/18 55/2 108/8 113/22 115/16 132/22 138/12</p> <p>L</p> <p>label [4] 17/20 105/19 114/21 117/6 lack [2] 48/21 115/22 lacks [1] 4/24 lane [30] 1/14 1/18 23/7 24/1 63/5 64/20 66/3 66/7 67/21 69/15 69/15 74/5 74/9 74/12 74/13 82/11 82/12 82/14 83/11 83/13 83/13 83/16 84/1 84/2 105/20 105/23 141/8 141/19 142/2 142/4 lanes [11] 57/2 60/2 61/8 65/2 69/8 69/14 72/15 74/3 74/10 74/11 82/13 large [2] 42/21 87/2 larger [2] 41/19 41/20 laser [7] 22/15 22/17 23/11 33/20 73/9 114/6 114/9 lasers [2] 33/22 113/18 last [14] 7/16 7/17 34/19 39/1 42/6 63/6 63/10 65/4 90/16 91/18 136/17 136/23 137/19 144/11 lasting [1] 140/24 late [1] 140/2 later [4] 41/17 90/1 90/16 141/11 lateral [17] 18/4 92/24 96/13 99/9 99/12 99/15 99/16 99/17 100/17 100/21 101/11 115/15 131/20 132/2 132/24 136/19 141/8 laterally [1] 18/3 latest [1] 91/4 lavalier [1] 130/5 law [4] 51/16 93/3 131/22 132/3 lawyers [1] 9/16 lay [1] 6/12 layout [2] 74/1 84/7 lead [4] 12/20 114/14 114/18 140/3 leader [2] 105/19 117/7 leading [4] 61/16 102/18 120/16 121/10 learned [4] 12/3 12/5 12/10 115/24 learning [2] 51/15 115/25 least [7] 25/17 72/12 86/22 115/8 132/12 135/2 141/24 leave [10] 26/17 64/11 76/12 76/13 76/21 77/7 84/20 84/21 97/21 140/23 leaves [6] 58/12 62/17 67/7 67/9 76/18 77/8 leaving [1] 89/15</p> |
|---|---|--|

| | | |
|---|--|--|
| <p>L</p> <p>led [4] 49/4 62/2 67/20 80/24</p> <p>left [57] 11/8 23/5 23/7 23/19 24/15 25/25 27/1 27/10 27/25 27/25 31/2 54/12 60/1 60/5 61/7 61/10 62/22 63/1 63/4 63/9 63/11 63/18 64/12 66/24 68/22 69/13 70/18 72/19 73/1 73/18 73/22 74/1 77/10 78/20 78/23 81/23 82/6 97/24 100/3 102/13 104/19 105/17 108/13 116/21 118/20 119/4 119/9 119/14 119/15 119/22 121/7 124/24 125/16 135/5 140/12 141/20 142/4</p> <p>left-hand [1] 24/15</p> <p>left-most [2] 23/5 23/19</p> <p>leftmost [2] 25/8 98/11</p> <p>length [6] 36/23 77/16 79/3 86/21 101/4 112/5</p> <p>lengths [1] 112/5</p> <p>less [7] 30/19 42/19 42/24 77/4 86/25 114/8 124/14</p> <p>let [20] 4/12 6/19 16/15 19/9 20/15 22/1 29/21 33/8 36/12 37/14 40/12 57/11 90/14 92/20 96/6 97/16 101/24 107/4 118/6 124/9</p> <p>let's [17] 10/5 10/7 11/12 22/2 30/22 75/19 83/12 90/2 90/23 92/5 127/17 128/8 128/16 130/2 130/7 137/11 152/24</p> <p>letter [1] 22/2</p> <p>level [8] 5/4 14/16 33/14 33/15 33/19 81/6 122/7 124/16</p> <p>leveled [1] 33/13</p> <p>levels [2] 76/25 124/24</p> <p>light [4] 95/13 95/15 113/7 140/22</p> <p>lighter [3] 70/22 70/24 72/12</p> <p>lighter-colored [1] 70/22</p> <p>lights [2] 15/16 130/25</p> <p>like [61] 7/10 20/6 22/10 24/13 24/16 27/16 30/14 30/22 30/24 33/11 35/14 35/17 36/24 39/20 43/5 43/19 50/6 52/22 54/16 59/25 62/16 64/24 66/10 66/22 66/23 67/4 67/9 68/8 68/9 68/16 71/2 71/5 71/7 73/23 75/20 76/7 82/14 89/12 89/23 90/15 90/16 91/12 94/11 94/21 101/25 109/3 114/18 115/4 124/20 127/2 133/12 139/2 139/3 144/8 144/21 151/23 152/5 152/6 152/7</p> <p>likely [3] 5/2 91/2 123/8</p> <p>limit [1] 147/10</p> <p>limited [3] 65/8 65/21 114/10</p> <p>LINDA [10] 1/23 89/25 147/22 150/22 151/4 151/11 151/21 152/1 154/2 154/8</p> <p>line [64] 7/9 22/12 24/1 25/4 27/14 27/15 27/18 27/20 29/7 30/19 30/20 36/1 36/6 60/8 61/24 62/19 63/17 63/25 64/2 64/6 66/17 66/19 66/21 66/25 67/20 68/22 69/13 72/3 72/4 72/6 72/9 72/9 72/24 74/21 75/3 75/5 76/8 76/9 76/9 76/10 88/8 103/19 104/8 108/2 118/16 118/17 118/18 118/18 118/19 118/20 119/1 119/2 119/2 119/4 119/4 119/5 119/5 119/8 119/15 119/16 119/17 119/21 131/25 141/12</p> <p>lines [27] 24/15 24/19 28/2 30/8 60/13 63/24 68/2 72/1 72/12 72/16 74/16</p> | <p>74/18 103/2 104/22 105/2 108/2 117/14 118/1 120/1 120/6 137/11 137/14 137/14 137/17 137/21 141/15 141/15</p> <p>link [1] 40/18</p> <p>list [1] 118/12</p> <p>listed [1] 87/23</p> <p>literature [11] 12/19 18/8 31/18 32/21 42/18 106/24 108/9 111/15 120/19 123/1 150/10</p> <p>little [18] 8/1 22/10 33/14 33/18 46/3 63/10 64/4 67/4 69/3 72/11 78/3 91/25 93/9 98/3 115/24 116/22 119/12 140/12</p> <p>live [2] 7/5 153/1</p> <p>lived [1] 25/14</p> <p>lives [2] 51/16 51/17</p> <p>loaded [1] 75/10</p> <p>local [1] 11/18</p> <p>located [2] 80/16 80/18</p> <p>location [8] 27/16 59/20 74/4 82/2 98/16 106/1 106/21 117/15</p> <p>lock [8] 26/7 26/8 26/9 26/17 26/17 45/17 95/9 132/14</p> <p>locked [3] 61/23 94/15 94/17</p> <p>locking [2] 45/18 76/8</p> <p>lookup [1] 140/22</p> <p>log [1] 52/2</p> <p>logical [1] 107/4</p> <p>logs [2] 51/7 62/18</p> <p>long [8] 35/5 77/15 77/20 80/8 109/14 113/23 128/12 140/24</p> <p>longer [7] 5/10 41/17 100/20 101/11 108/10 136/18 141/7</p> <p>longitudinal [2] 100/12 132/25</p> <p>look [50] 8/24 9/5 10/14 10/16 11/1 11/2 11/8 11/13 19/9 19/22 21/22 23/13 24/16 25/4 29/15 29/25 30/13 31/15 31/22 35/6 37/1 42/14 51/11 51/24 53/13 53/18 66/9 71/5 75/20 75/21 82/1 87/10 88/8 88/16 92/5 96/6 97/20 98/15 99/1 100/2 102/25 105/21 119/1 120/22 139/2 149/12 150/25 151/1 152/6 152/14</p> <p>looked [14] 15/16 23/9 24/8 24/13 36/25 37/1 38/16 51/21 64/20 76/24 77/1 85/19 85/22 109/19</p> <p>looking [42] 17/13 21/17 23/4 23/8 23/23 24/8 24/11 24/17 24/22 26/20 27/9 39/2 42/11 46/23 50/1 56/20 56/25 57/1 57/15 58/14 58/16 59/24 61/6 61/18 62/3 62/21 63/15 70/19 70/25 73/3 74/16 76/11 81/17 95/15 97/16 98/10 105/25 111/1 120/8 125/14 149/9 149/10</p> <p>looks [7] 27/16 66/10 66/22 66/23 67/4 67/9 139/16</p> <p>loose [13] 47/10 47/12 54/11 68/3 68/4 68/5 68/14 68/14 98/3 124/9 124/12 124/19 124/23</p> <p>lose [2] 47/5 83/15</p> <p>loses [1] 41/15</p> <p>losing [3] 41/1 41/18 73/7</p> <p>loss [11] 15/23 47/16 48/13 48/16 67/19 125/11 125/24 126/23 127/7 127/16 135/3</p> <p>lost [5] 73/11 81/11 125/21 135/13 136/6</p> | <p>lot [15] 70/23 71/1 85/18 86/2 88/24 93/10 109/9 115/25 122/16 139/3 139/4 141/3 141/15 142/11 150/21</p> <p>love [2] 90/11 90/13</p> <p>lower [9] 24/14 27/10 27/17 27/25 28/2 59/25 81/23 97/24 123/17</p> <p>luxury [1] 149/21</p> <p>M</p> <p>M-A-N-N-I-N-G [1] 7/18</p> <p>ma'am [1] 144/9</p> <p>made [15] 16/14 32/13 32/14 38/8 39/24 54/21 55/2 62/16 65/1 66/4 66/16 70/2 85/22 116/9 146/17</p> <p>magic [1] 51/6</p> <p>main [2] 34/1 56/6</p> <p>make [58] 3/20 3/21 4/14 7/5 8/21 9/13 11/2 15/3 21/5 25/5 27/15 33/16 33/22 35/4 35/6 37/9 37/16 39/15 39/23 39/24 40/12 40/22 44/10 44/25 50/22 51/9 51/13 51/25 52/3 54/3 59/15 65/25 70/4 70/5 70/18 70/24 72/23 78/24 98/25 101/9 101/24 102/1 102/8 102/24 103/20 106/2 109/15 109/16 109/17 110/15 113/15 116/15 132/2 148/25 149/14 151/2 151/14 152/13</p> <p>makes [7] 4/9 4/12 7/2 41/12 96/24 104/8 122/15</p> <p>making [8] 26/19 36/22 46/10 72/1 76/22 78/20 88/14 105/9</p> <p>Management [1] 12/16</p> <p>maneuver [3] 67/20 86/17 106/25</p> <p>manipulations [1] 126/15</p> <p>manner [3] 13/16 25/3 57/20</p> <p>Manning [47] 2/5 5/22 6/15 7/14 7/17 7/19 24/24 28/14 50/25 55/14 56/17 61/25 63/7 64/14 70/1 81/5 84/17 98/11 98/19 101/18 102/4 102/21 104/16 104/22 105/2 106/21 109/5 109/20 116/15 117/5 121/5 121/13 121/21 122/17 123/15 124/11 127/19 133/24 137/15 137/23 141/18 145/1 145/24 147/17 148/9 148/17 149/5</p> <p>Manning's [7] 4/23 54/2 120/8 127/19 127/24 143/11 150/14</p> <p>manual [1] 39/13</p> <p>many [11] 13/10 14/1 14/12 48/7 51/9 51/18 75/23 76/19 94/14 116/14 121/25</p> <p>map [4] 29/3 71/11 103/3 112/8</p> <p>mapped [4] 36/21 82/2 102/15 120/23</p> <p>mapping [2] 33/24 110/2</p> <p>mark [113] 17/16 17/17 17/20 17/21 21/25 22/4 24/4 24/6 25/23 25/24 26/18 26/25 27/22 28/1 28/6 31/25 33/4 34/16 34/18 35/8 35/22 35/23 41/21 43/19 57/6 57/16 57/17 57/17 58/25 59/8 60/11 60/21 60/23 60/25 61/23 62/14 63/2 63/4 76/13 76/18 77/7 84/25 85/1 92/9 92/9 94/14 94/15 94/15 94/24 95/1 95/1 95/4 95/6 95/10 95/10 95/12 95/13 95/18 95/18 95/19 95/20 95/20 96/11 96/11 97/12 97/18 97/23 98/1 98/2 98/5 98/6 98/17 102/13 103/17 103/23 104/24 105/5 105/8 106/4 110/20 110/21 113/15 115/7 117/24 118/16 118/17 118/21 119/8 119/14 119/22</p> |
|---|--|--|

| | | |
|--|---|---|
| <p>M</p> <p>mark... [23] 120/11 121/6 121/8 121/10 121/13 121/17 130/19 131/13 133/13 133/14 133/14 133/25 134/1 134/2 134/2 138/22 138/23 138/23 140/24 141/13 142/15 142/17 143/15</p> <p>marked [8] 28/25 42/5 43/18 56/23 58/3 59/23 61/4 62/1</p> <p>marker [2] 24/13 122/14</p> <p>markings [1] 57/4</p> <p>marks [142] 14/19 15/2 17/11 17/14 18/9 21/18 23/24 23/25 25/1 25/3 25/16 26/19 26/20 26/21 26/22 26/23 26/24 27/7 28/15 28/17 28/21 28/21 28/23 29/6 29/16 30/4 30/6 30/9 30/11 30/12 30/13 30/23 31/16 31/16 31/20 32/23 35/3 36/3 37/5 45/19 57/6 57/8 57/9 57/9 57/9 57/11 57/11 57/12 57/12 57/13 57/13 57/14 57/15 57/18 58/7 58/8 58/9 58/12 58/15 58/18 59/1 59/6 59/16 59/19 59/21 60/3 60/5 60/9 60/14 60/16 61/10 61/10 61/16 61/21 62/19 63/1 63/11 64/12 72/17 72/18 72/23 73/16 75/2 75/14 75/16 75/20 76/3 76/3 76/21 78/20 78/23 78/23 84/21 84/22 86/9 86/15 94/7 94/8 94/13 94/23 95/2 95/2 95/7 95/13 95/14 95/17 95/17 96/8 98/4 98/17 99/1 99/8 101/15 101/17 102/5 102/7 102/16 102/21 103/6 103/8 103/16 104/17 106/2 106/7 106/8 106/13 108/2 108/5 113/14 116/9 116/14 120/1 120/9 120/23 133/14 133/15 140/12 140/19 140/22 140/25 141/11 141/19</p> <p>marry [1] 8/21</p> <p>MARSHALL [3] 1/23 154/2 154/8</p> <p>MARYLAND [5] 1/1 1/6 1/15 1/18 12/7</p> <p>masonry [1] 140/4</p> <p>mass [21] 93/4 95/23 96/1 99/24 100/1 100/3 100/9 100/13 103/24 104/4 104/7 108/7 125/9 126/9 126/10 126/14 129/7 130/16 131/2 131/4 131/5</p> <p>mastered [1] 148/24</p> <p>match [1] 69/23</p> <p>matched [1] 62/19</p> <p>matches [1] 5/4</p> <p>material [13] 39/13 39/21 47/10 54/11 68/14 71/4 71/7 77/11 78/4 94/12 106/13 124/10 124/12</p> <p>materials [9] 12/10 12/12 13/2 40/19 53/8 53/12 53/18 88/25 98/3</p> <p>math [2] 78/14 87/23</p> <p>mathematical [1] 99/12</p> <p>mathematically [1] 103/20</p> <p>matter [5] 5/5 65/6 90/8 120/14 154/4</p> <p>matters [2] 54/6 151/6</p> <p>Matthew [3] 2/5 7/14 7/17</p> <p>may [32] 3/18 4/15 6/24 8/19 8/20 9/21 13/12 15/17 24/4 50/19 53/4 54/9 55/2 55/6 55/13 66/16 67/2 71/2 80/14 88/22 99/18 109/11 109/15 111/8 118/10 118/11 119/3 128/9 129/9 130/14 145/21 152/19</p> <p>maybe [8] 22/13 22/13 45/7 55/22 78/11 90/19 121/17 121/18</p> | <p>me [77] 3/13 3/21 4/8 4/12 4/20 4/22 5/21 6/9 6/14 7/3 7/4 7/23 8/17 11/10 16/9 16/14 16/15 16/19 19/9 19/18 20/15 24/13 29/21 30/6 33/8 36/12 37/14 40/3 40/12 44/14 45/3 45/24 48/10 51/24 55/17 56/10 56/11 57/11 58/5 60/18 60/22 67/22 73/9 74/20 81/8 84/12 90/2 90/18 92/7 92/20 96/6 97/16 97/23 101/24 101/25 102/3 105/4 107/4 107/23 110/20 118/6 124/9 126/12 145/22 147/24 148/9 149/13 149/17 150/13 150/13 150/25 150/25 151/7 151/7 151/13 151/25 152/13</p> <p>mean [30] 8/12 13/1 18/13 20/12 35/6 39/17 40/1 40/8 43/20 48/14 51/6 51/11 52/1 52/3 55/21 70/15 73/7 74/19 78/3 86/8 92/22 96/11 101/17 101/22 115/21 116/3 127/8 133/13 139/16 153/14</p> <p>meaning [2] 46/11 131/4</p> <p>meaningful [1] 135/2</p> <p>means [6] 91/6 95/4 95/22 110/8 129/15 131/6</p> <p>meant [1] 30/9</p> <p>measure [21] 28/17 32/2 32/3 32/4 32/23 38/2 41/16 43/5 44/8 59/3 79/1 100/23 102/17 102/19 103/16 113/16 113/19 114/11 120/15 122/21 140/6</p> <p>measured [11] 33/3 35/24 43/1 43/10 46/13 88/3 104/23 116/14 117/19 120/18 120/20</p> <p>measurement [21] 8/25 36/8 38/10 38/11 42/20 43/6 43/13 45/14 77/15 78/18 79/3 79/5 87/1 98/20 111/15 112/3 112/7 112/18 139/13 140/4 143/8</p> <p>measurements [25] 5/23 10/6 15/7 32/10 37/15 38/9 39/7 39/15 48/25 77/2 77/12 78/21 78/24 86/16 99/7 102/11 106/21 109/19 109/23 111/25 112/9 113/23 115/19 116/8 121/23</p> <p>measures [2] 113/19 114/3</p> <p>measuring [16] 31/19 31/25 42/16 42/20 43/10 45/19 47/25 48/15 66/22 87/2 87/6 104/4 109/21 110/23 138/22 139/7</p> <p>mechanisms [1] 71/11</p> <p>median [8] 23/8 24/1 61/14 73/2 135/14 135/16 136/6 141/20</p> <p>meets [1] 4/9</p> <p>melt [1] 140/16</p> <p>member [1] 34/13</p> <p>memo [1] 149/9</p> <p>memory [3] 20/17 138/4 138/6</p> <p>mention [1] 38/7</p> <p>mentioned [13] 13/20 44/10 70/1 70/10 71/10 77/12 79/10 79/20 80/6 80/14 120/12 120/12 122/17</p> <p>mentions [1] 112/14</p> <p>mere [2] 15/2 147/15</p> <p>met [1] 150/1</p> <p>metal [1] 70/17</p> <p>meter [6] 32/24 103/3 103/12 116/10 116/11 117/18</p> <p>method [26] 12/10 15/3 31/15 32/9 36/12 38/7 39/19 44/9 45/4 45/8 45/14 52/9 84/25 103/3 104/1 107/14 108/25 109/22 109/25 125/24 126/19 126/25 127/5 127/7 143/20 149/6</p> | <p>methodologies [1] 150/8</p> <p>methodology [19] 6/2 6/3 6/19 92/13 92/14 96/14 102/17 103/10 115/23 122/4 137/10 148/6 148/10 149/7 149/22 149/22 150/2 150/4 150/6</p> <p>methods [1] 122/11</p> <p>mid [1] 144/12</p> <p>mid-October [1] 144/12</p> <p>middle [50] 31/6 31/25 32/4 33/3 33/18 37/24 39/6 39/16 41/20 42/17 42/19 42/20 42/25 43/1 43/10 74/21 74/25 79/1 79/4 79/8 81/6 86/16 86/22 86/25 87/2 87/6 87/25 88/4 98/19 100/2 101/18 102/11 102/20 103/6 103/9 104/18 104/23 105/12 105/16 106/2 109/21 110/12 110/14 112/4 112/16 120/6 120/10 138/18 140/6 143/8</p> <p>might [15] 6/22 9/24 35/23 36/9 41/11 54/17 65/23 66/11 71/6 76/17 80/7 86/5 101/14 128/12 141/5</p> <p>mile [1] 84/2</p> <p>miles [5] 64/23 75/19 75/23 81/13 93/14</p> <p>MILLER [23] 1/17 2/6 2/8 2/12 2/14 3/9 6/17 6/22 8/19 9/20 11/16 28/12 39/3 39/4 53/5 56/3 56/22 67/16 71/10 71/14 71/18 84/8 89/22</p> <p>mind [10] 7/10 9/20 11/15 56/11 64/4 69/23 101/21 129/25 145/22 149/19</p> <p>mindful [1] 115/8</p> <p>mine [1] 114/8</p> <p>minimum [1] 112/16</p> <p>minus [1] 123/4</p> <p>minute [2] 53/1 152/9</p> <p>minutes [3] 52/17 53/2 128/17</p> <p>mirror [1] 64/21</p> <p>missed [2] 16/11 22/8</p> <p>missing [2] 103/14 107/23</p> <p>Mm [4] 27/19 67/1 81/19 82/3</p> <p>Mm-hmm [4] 27/19 67/1 81/19 82/3</p> <p>mode [2] 114/8 114/8</p> <p>model [16] 37/3 37/7 37/10 37/16 99/12 99/18 100/10 104/2 104/3 106/13 108/12 110/17 111/7 121/6 129/22 130/4</p> <p>models [5] 29/7 42/11 42/12 117/7 143/16</p> <p>moment [5] 30/22 62/1 81/21 104/15 124/18</p> <p>month [2] 78/10 141/4</p> <p>more [37] 12/22 12/24 19/13 29/14 30/18 35/1 36/1 41/21 46/3 46/5 46/5 46/25 47/24 47/24 48/3 52/9 62/20 63/10 70/22 75/3 88/4 90/20 104/14 106/24 109/3 109/10 109/16 110/2 123/8 133/2 140/23 140/24 141/4 143/19 147/15 151/24 153/15</p> <p>morning [1] 151/2</p> <p>most [20] 4/14 6/4 6/8 6/9 7/3 7/3 14/16 23/5 23/19 27/1 63/20 93/6 93/15 94/13 99/5 114/14 126/2 140/17 146/21 149/13</p> <p>motion [6] 1/10 61/19 61/20 92/25 93/4 116/4</p> <p>motions [3] 3/4 129/18 145/18</p> <p>mount [1] 122/20</p> <p>move [7] 9/2 23/17 66/14 66/16 96/5</p> |
|--|---|---|

| | | |
|---|--|---|
| <p>M</p> <p>move... [2] 114/1 122/5</p> <p>movement [1] 129/19</p> <p>moves [2] 27/6 67/8</p> <p>movie [1] 102/2</p> <p>moving [9] 16/25 53/23 62/12 71/6 110/11 118/24 119/10 129/25 130/16</p> <p>Mr [24] 2/6 2/7 2/8 2/12 2/14 39/3 39/4 54/2 79/6 89/24 90/5 90/7 91/24 93/16 97/21 101/25 104/14 105/15 118/9 128/21 144/1 144/19 148/22 149/5</p> <p>Mr. [21] 3/10 6/17 6/22 8/19 9/20 11/16 28/12 53/5 53/7 56/3 56/22 67/16 71/10 71/14 71/18 79/7 84/8 89/22 127/17 132/11 153/13</p> <p>Mr. Cover [2] 127/17 132/11</p> <p>Mr. Daily [2] 53/7 79/7</p> <p>Mr. Miller [15] 6/17 6/22 8/19 9/20 11/16 28/12 53/5 56/3 56/22 67/16 71/10 71/14 71/18 84/8 89/22</p> <p>Mr. Smith [1] 3/10</p> <p>Mr. Smock [1] 153/13</p> <p>Ms [5] 2/13 7/11 128/11 130/11 137/20</p> <p>much [14] 3/7 8/16 12/22 12/24 56/14 63/2 77/10 77/11 89/18 91/13 104/12 132/23 151/12 153/19</p> <p>mud [1] 94/12</p> <p>multiplied [1] 88/14</p> <p>must [5] 74/5 96/12 101/3 103/15 125/10</p> <p>my [68] 6/9 6/25 7/5 7/17 8/4 10/19 12/5 12/12 14/5 22/11 22/18 23/15 24/11 26/16 28/4 29/14 37/20 38/8 39/17 40/10 45/10 46/19 54/9 58/10 59/9 60/3 60/7 60/23 61/1 64/13 65/22 67/24 68/2 69/22 70/8 72/15 73/7 74/19 78/4 78/14 78/19 81/20 90/9 90/10 92/16 93/16 107/19 107/25 109/14 110/17 110/20 117/13 118/6 119/12 130/21 134/25 135/24 138/4 138/6 140/1 141/16 145/22 149/14 149/19 150/12 151/10 152/13 152/14</p> <p>myself [4] 15/14 50/4 140/4 152/12</p> | <p>152/22</p> <p>needed [5] 4/5 40/16 69/22 78/5 109/17</p> <p>needing [1] 40/9</p> <p>needs [1] 9/13</p> <p>negligence [1] 147/15</p> <p>neither [1] 54/14</p> <p>never [1] 32/25</p> <p>new [3] 112/15 116/3 145/11</p> <p>Newton's [3] 93/3 131/22 132/3</p> <p>next [9] 10/14 22/12 62/8 67/5 81/6 136/17 136/23 152/24 153/16</p> <p>nice [2] 91/11 139/15</p> <p>night [8] 18/16 20/5 20/11 21/2 21/12 89/12 90/17 151/8</p> <p>nights [2] 151/24 151/25</p> <p>nine [6] 10/22 20/14 38/23 42/6 87/11 87/12</p> <p>Nissan [17] 36/23 37/19 61/19 70/3 70/7 70/10 70/13 76/1 76/23 80/22 119/17 135/13 135/16 135/20 135/25 136/4 137/2</p> <p>no [95] 1/4 3/14 5/10 5/15 9/9 9/11 9/11 9/12 9/16 10/1 13/6 15/1 18/19 20/19 20/24 21/6 21/14 21/21 24/7 28/19 34/18 35/19 36/6 36/25 40/17 40/18 40/21 43/14 43/16 45/12 45/21 45/23 47/18 49/4 49/15 49/16 49/20 49/22 49/25 50/2 50/10 50/13 51/1 51/25 52/18 55/12 55/25 57/10 57/12 59/18 61/17 65/12 68/19 69/20 70/4 70/6 70/15 74/23 76/7 76/8 79/12 81/14 84/3 84/5 88/4 88/21 89/11 89/17 97/13 97/19 100/20 101/11 103/13 106/6 108/10 109/8 120/12 124/3 124/8 128/2 128/6 128/7 129/5 134/16 134/21 134/23 134/25 136/18 139/9 139/9 139/11 140/21 141/7 144/2 146/9</p> <p>nodes [1] 103/1</p> <p>non [3] 16/17 54/11 94/15</p> <p>non-asphalt [1] 54/11</p> <p>non-police [1] 16/17</p> <p>non-rotating [1] 94/15</p> <p>none [1] 21/18</p> <p>nor [1] 120/12</p> <p>north [13] 12/16 36/16 36/16 36/19 36/21 57/1 60/1 63/10 64/8 69/7 82/13 82/21 135/18</p> <p>northbound [13] 57/2 60/2 61/8 62/23 63/8 64/18 66/4 67/8 67/21 69/8 69/14 69/15 136/4</p> <p>Northeast [1] 85/18</p> <p>northern [1] 64/6</p> <p>not [213]</p> <p>notations [1] 72/2</p> <p>note [4] 3/16 19/11 28/14 29/7</p> <p>notebook [4] 8/20 53/8 87/12 87/13</p> <p>noted [1] 115/17</p> <p>notes [6] 1/24 12/12 35/6 40/10 40/14 85/22</p> <p>nothing [9] 40/10 40/15 50/5 70/8 70/8 98/14 123/20 136/12 142/21</p> <p>noticed [1] 47/8</p> <p>November [1] 1/7</p> <p>now [70] 12/22 12/24 16/22 18/7 23/10 24/21 27/9 28/5 28/16 28/21 32/6 32/21 34/14 37/22 38/23 42/16 43/9 43/12</p> | <p>47/2 51/24 52/20 53/12 55/20 56/23 57/4 57/8 57/25 58/3 59/23 60/7 60/12 60/22 61/4 63/6 65/25 66/9 69/6 71/17 71/19 72/3 72/19 73/18 75/2 75/12 75/25 78/3 80/14 81/5 84/19 88/8 91/2 97/14 97/16 99/4 100/20 107/3 107/17 112/17 117/17 118/10 120/18 122/15 124/23 133/17 137/14 144/7 145/11 150/21 151/15 152/22</p> <p>number [29] 3/3 4/20 34/22 38/25 42/7 56/1 56/1 56/24 59/24 60/9 62/21 63/19 63/23 63/25 64/1 64/3 71/19 88/6 108/17 119/12 134/3 134/3 136/17 136/21 136/22 137/25 137/25 138/21 143/19</p> <p>numbered [1] 10/15</p> <p>numbers [4] 43/7 43/8 46/10 106/23</p> <p>numerous [2] 51/7 62/11</p> <p>nuts [1] 7/2</p> |
| <p>N</p> <p>nail [2] 140/4 140/6</p> <p>name [9] 7/15 7/16 7/17 7/17 34/19 44/16 91/18 91/18 91/20</p> <p>nap [2] 89/13 89/15</p> <p>narrow [3] 67/10 74/11 95/20</p> <p>narrowed [2] 74/10 123/18</p> <p>natural [1] 11/8</p> <p>nature [1] 140/14</p> <p>Navy [1] 151/22</p> <p>near [1] 38/25</p> <p>nearly [2] 77/5 77/6</p> <p>necessarily [2] 129/3 133/7</p> <p>necessary [1] 122/7 135/1</p> <p>necessity [1] 38/7</p> <p>need [39] 5/7 5/10 5/17 7/4 8/24 9/8 9/10 9/18 10/8 11/1 11/2 16/20 17/6 30/24 31/5 31/5 31/8 31/12 39/18 55/4 87/8 87/22 88/25 90/9 90/14 91/5 92/16 94/1 103/3 114/9 115/14 116/19 122/9 145/16 148/7 148/21 151/12 151/13</p> | <p>north [13] 12/16 36/16 36/16 36/19 36/21 57/1 60/1 63/10 64/8 69/7 82/13 82/21 135/18</p> <p>northbound [13] 57/2 60/2 61/8 62/23 63/8 64/18 66/4 67/8 67/21 69/8 69/14 69/15 136/4</p> <p>Northeast [1] 85/18</p> <p>northern [1] 64/6</p> <p>not [213]</p> <p>notations [1] 72/2</p> <p>note [4] 3/16 19/11 28/14 29/7</p> <p>notebook [4] 8/20 53/8 87/12 87/13</p> <p>noted [1] 115/17</p> <p>notes [6] 1/24 12/12 35/6 40/10 40/14 85/22</p> <p>nothing [9] 40/10 40/15 50/5 70/8 70/8 98/14 123/20 136/12 142/21</p> <p>noticed [1] 47/8</p> <p>November [1] 1/7</p> <p>now [70] 12/22 12/24 16/22 18/7 23/10 24/21 27/9 28/5 28/16 28/21 32/6 32/21 34/14 37/22 38/23 42/16 43/9 43/12</p> | <p>oath [1] 6/16</p> <p>object [7] 9/24 65/3 100/5 100/7 131/4 131/23 131/25</p> <p>objection [2] 89/17 127/25</p> <p>objectionable [2] 5/9 5/19</p> <p>objects [2] 47/12 124/15</p> <p>obligation [2] 145/1 149/25</p> <p>obligations [1] 3/24</p> <p>oblique [3] 96/24 130/18 130/23</p> <p>observance [1] 14/19</p> <p>observation [4] 50/8 64/10 74/19 147/1</p> <p>observations [10] 5/23 52/10 55/16 73/3 73/20 77/3 79/24 146/2 146/11 147/6</p> <p>observe [1] 62/8</p> <p>observed [6] 54/15 57/7 70/10 72/18 73/16 119/25</p> <p>obtain [1] 87/20</p> <p>obvious [1] 99/3</p> <p>obviously [8] 17/16 20/17 31/23 38/5 39/18 51/14 77/9 90/14</p> <p>occupant [1] 51/4</p> <p>occur [1] 98/17</p> <p>occurred [7] 13/9 47/16 54/17 55/11 121/4 133/25 141/25</p> <p>occurs [3] 50/16 94/17 127/10</p> <p>October [2] 78/11 144/12</p> <p>odd [1] 141/12</p> <p>off [28] 9/17 15/17 20/11 26/23 27/5 32/14 33/20 33/21 33/22 33/23 37/24 44/25 59/4 64/5 64/10 67/21 73/19 73/19 74/13 75/12 75/16 82/15 84/2 90/9 106/14 106/22 134/18 135/17</p> <p>off-tracking [2] 106/14 106/22</p> <p>offer [2] 6/13 65/24</p> <p>offering [1] 5/10</p> <p>office [3] 1/14 1/17 89/7</p> <p>officer [33] 15/14 18/23 18/24 19/4 19/6 19/23 20/1 20/21 24/24 33/6 34/6 34/7 34/8 34/10 34/15 34/20 35/20 62/24 65/15 72/22 80/9 85/4 102/15 104/16 105/9 114/14 120/8 121/13 127/18 137/7 139/6 139/19 148/8</p> <p>officers [8] 31/23 32/8 46/25 109/21 111/25 138/22 139/2 139/12</p> <p>OFFICIAL [2] 1/23 154/8</p> |

| | | |
|--|---|---|
| <p>O</p> <p>offset [1] 108/13</p> <p>offtrack [1] 100/23</p> <p>often [4] 94/17 127/10 140/17 142/12</p> <p>Oh [3] 8/17 69/11 90/11</p> <p>okay [51] 8/16 9/14 9/15 11/11 13/15 16/13 17/8 19/3 19/9 21/17 24/19 28/12 28/20 30/16 33/8 34/7 36/7 38/16 38/20 38/23 40/12 40/22 42/10 43/8 45/8 45/13 49/18 52/24 53/2 53/25 58/24 69/24 74/3 81/24 82/10 84/14 87/18 87/24 88/8 88/22 97/20 100/6 103/14 117/1 120/22 128/15 132/7 133/11 150/20 153/2 153/18</p> <p>old [4] 7/22 40/10 46/24 101/25</p> <p>omitted [1] 20/18</p> <p>on [319]</p> <p>on-hands [1] 139/7</p> <p>on-scene [1] 109/19</p> <p>once [14] 32/24 33/18 72/1 81/5 85/23 100/18 101/10 105/25 113/20 132/4 135/4 151/13 152/17 153/1</p> <p>one [113] 6/6 7/25 9/17 10/16 10/17 10/19 14/8 16/17 17/16 17/23 21/14 25/14 27/10 27/16 27/17 31/1 34/11 36/6 36/12 38/11 39/3 39/12 39/18 39/19 39/24 40/1 40/4 40/9 41/4 41/8 41/10 41/23 42/12 44/11 44/14 44/17 44/18 45/16 47/19 47/20 47/24 48/3 48/10 48/19 52/2 56/1 56/24 60/9 63/25 64/7 64/8 65/25 66/2 67/5 68/24 69/9 71/18 77/12 77/25 78/5 78/13 78/18 79/9 83/13 84/4 90/12 95/23 96/12 99/13 101/3 103/21 105/5 108/16 110/14 111/3 111/23 112/25 114/15 115/2 115/9 115/13 116/6 117/7 117/10 120/22 121/14 121/17 121/19 122/9 122/17 122/18 122/25 124/19 126/10 126/13 127/2 127/15 128/14 129/6 130/9 130/11 131/4 134/16 134/21 138/9 139/19 140/14 143/15 143/19 144/14 149/16 150/22 153/6</p> <p>one-eighth [2] 79/9 138/9</p> <p>ones [5] 20/21 25/21 63/20 104/19 122/18</p> <p>online [1] 40/18</p> <p>only [15] 4/4 17/3 20/5 20/14 48/10 59/15 63/25 77/25 79/20 111/3 131/20 132/13 132/22 132/25 147/4</p> <p>onset [3] 95/19 98/16 133/25</p> <p>onto [3] 74/4 108/5 140/17</p> <p>operated [2] 14/2 33/9</p> <p>operating [6] 33/6 34/1 34/4 66/8 114/19 147/13</p> <p>operation [1] 147/16</p> <p>operator [1] 114/21</p> <p>opine [2] 55/20 131/13</p> <p>opinion [16] 6/2 49/19 55/7 65/7 65/18 65/20 73/8 92/12 97/25 98/5 146/3 146/18 147/2 147/7 148/19 149/17</p> <p>opinions [11] 4/6 5/8 54/21 54/24 55/18 55/24 55/24 65/23 109/18 114/17 149/6</p> <p>opportunity [2] 6/12 144/21</p> <p>opposed [4] 26/22 49/9 59/7 61/22</p> <p>opposite [1] 119/23</p> | <p>opposition [1] 152/16</p> <p>or [250]</p> <p>order [9] 8/21 8/24 17/20 26/11 31/13 38/2 74/25 103/16 148/24</p> <p>ordinants [1] 110/14</p> <p>ordinarily [1] 4/3</p> <p>ordinary [1] 56/10</p> <p>ordinate [43] 31/6 31/25 32/4 33/3 39/6 39/16 41/20 42/17 42/19 42/21 42/25 43/1 43/10 74/22 74/25 79/1 79/4 79/8 81/6 86/16 86/22 86/25 87/2 87/6 87/25 88/4 98/19 101/18 102/12 102/20 103/7 103/9 104/18 104/23 105/16 106/2 109/22 112/5 112/16 120/6 138/18 140/7 143/8</p> <p>ordinates [2] 37/24 110/13</p> <p>organizations' [1] 4/5</p> <p>orient [2] 104/2 106/13</p> <p>orientation [1] 57/2</p> <p>original [2] 30/5 148/18</p> <p>originally [2] 29/15 144/12</p> <p>originals [1] 19/12</p> <p>other [58] 3/25 14/20 17/19 20/9 20/21 24/4 25/16 29/15 38/6 40/4 40/19 43/16 44/9 45/13 45/14 46/25 47/20 48/25 49/13 54/15 55/22 59/8 60/14 67/20 69/10 70/6 71/11 73/25 74/24 76/7 76/8 77/4 83/12 95/2 95/7 95/11 101/2 102/15 106/18 111/1 111/6 111/18 111/18 111/21 112/2 113/23 117/14 117/25 118/10 121/20 123/22 127/6 134/8 140/6 147/24 150/10 150/17 151/6</p> <p>others [1] 4/6</p> <p>otherwise [2] 115/12 147/13</p> <p>our [21] 3/11 3/16 6/9 7/3 7/11 7/24 18/23 33/23 34/13 36/19 36/19 36/20 44/17 45/1 45/16 46/18 52/19 85/18 90/23 93/11 122/18</p> <p>out [54] 4/14 5/3 5/18 6/12 6/17 15/7 15/11 23/11 25/5 29/4 29/13 29/14 30/7 32/25 33/13 33/15 33/20 36/21 44/20 45/3 45/18 46/15 46/16 58/5 58/11 59/2 62/16 71/11 71/25 78/7 86/6 87/21 88/19 92/24 98/15 98/18 99/4 99/8 101/6 119/12 121/12 124/23 127/7 131/23 133/10 134/15 134/21 139/5 139/15 140/6 141/15 146/23 148/23 152/15</p> <p>outcome [2] 48/22 49/5</p> <p>outer [1] 120/10</p> <p>outlined [1] 106/12</p> <p>outlines [1] 150/25</p> <p>outside [24] 35/2 35/18 38/21 42/13 80/21 80/23 94/24 95/6 102/18 102/18 104/23 105/11 105/13 115/10 115/18 120/16 120/16 120/16 121/10 130/17 131/24 132/1 143/16 146/15</p> <p>outweighs [1] 55/8</p> <p>over [25] 9/23 11/13 29/5 30/6 30/8 36/20 38/15 41/2 71/17 78/14 83/14 84/18 85/24 106/13 108/10 111/1 114/16 116/22 119/6 130/8 130/10 136/7 141/9 141/20 146/13</p> <p>overall [1] 48/4</p> <p>overcome [1] 56/9</p> | <p>overgrown [1] 62/12</p> <p>overlaid [3] 108/1 108/5 117/14</p> <p>overlay [1] 119/2</p> <p>overlying [2] 104/2 111/7</p> <p>overlays [1] 29/5</p> <p>overriding [1] 45/17</p> <p>Overruled [1] 128/1</p> <p>own [6] 19/19 35/10 51/13 79/24 116/13 143/15</p> <p>P</p> <p>P-R-O-C-E-E-D-I-N-G-S [1] 3/1</p> <p>p.m [3] 1/8 144/11 153/21</p> <p>Packard [1] 113/2</p> <p>page [13] 38/24 39/1 42/6 42/7 87/16 87/19 111/9 119/22 136/17 136/20 136/22 138/11 149/9</p> <p>pages [2] 8/23 93/1</p> <p>paint [12] 25/11 25/11 25/12 27/10 27/16 57/6 57/6 60/3 70/25 71/2 71/4 86/10</p> <p>pan [5] 63/1 63/11 67/14 68/8 68/15</p> <p>panel [1] 66/11</p> <p>paper [3] 122/25 130/22 130/23</p> <p>papers [1] 110/6</p> <p>paragraph [1] 137/6</p> <p>parallel [4] 28/2 60/13 69/9 94/24</p> <p>parenthesis [2] 88/10 88/20</p> <p>Park [3] 7/21 78/18 107/20</p> <p>parked [2] 62/24 63/3</p> <p>parking [4] 71/1 139/3 139/4 141/3</p> <p>Parkway [14] 51/19 57/3 60/2 61/8 62/23 63/9 64/19 66/5 81/23 82/2 136/5 141/5 142/6 142/8</p> <p>part [27] 14/7 24/20 37/6 41/16 41/17 53/13 54/20 54/22 55/14 55/18 55/23 64/5 65/5 65/14 65/18 65/22 81/23 82/10 82/18 87/22 104/24 110/23 121/6 122/5 136/15 137/19 145/5</p> <p>partially [1] 72/12</p> <p>particular [23] 4/13 12/9 12/14 12/19 21/20 26/20 30/3 32/2 32/17 33/2 37/9 37/16 39/20 41/23 48/7 86/9 104/17 122/4 123/1 124/10 124/20 134/22 137/6</p> <p>particularly [2] 11/24 50/15</p> <p>parties [3] 4/4 4/4 6/11</p> <p>parts [2] 53/5 62/11</p> <p>pass [10] 54/12 65/1 69/7 69/8 69/20 83/9 83/15 83/18 83/22 84/4</p> <p>passed [1] 145/14</p> <p>passenger [15] 27/2 27/3 28/7 28/8 30/10 42/14 48/21 51/12 63/21 63/21 67/17 76/15 77/5 78/25 78/25</p> <p>passes [1] 103/21</p> <p>passing [4] 12/18 69/9 125/9 139/9</p> <p>past [2] 24/24 111/19</p> <p>path [13] 18/17 20/5 20/10 31/12 31/13 32/19 38/3 41/24 62/7 62/15 62/16 76/6 97/4</p> <p>paths [1] 141/9</p> <p>PAUL [1] 1/10</p> <p>Pause [5] 8/8 22/20 22/24 130/6 152/2</p> <p>pavement [12] 15/2 96/24 124/13 130/18 131/21 132/21 132/23 134/18 139/3 140/5 140/13 141/14</p> |
|--|---|---|

| | | |
|---|---|--|
| P | | |
| <p> pay [2] 122/21 145/10 PDF [1] 117/13 peddle [1] 26/13 peeling [2] 58/11 59/2 peer [1] 150/9 pen [3] 60/7 60/24 72/15 people [9] 41/11 51/19 55/14 58/10 92/8 92/14 94/14 140/1 148/15 per [6] 64/23 75/19 75/23 81/13 93/13 93/14 perceived [1] 55/2 percent [3] 90/12 133/1 133/2 percentages [1] 124/17 percentile [2] 123/5 123/6 perception [2] 146/6 146/18 perfect [1] 104/1 perfectly [1] 100/5 perform [1] 38/9 performing [1] 20/22 perhaps [4] 68/21 71/3 143/19 148/24 period [2] 140/25 141/2 permanent [2] 140/23 140/24 permission [1] 3/12 perpendicular [2] 25/3 57/20 person [11] 33/25 34/4 50/14 51/22 114/5 114/12 114/13 114/15 114/19 114/20 127/4 personally [3] 5/23 85/3 138/13 phantom [1] 15/12 Philadelphia [1] 102/1 phone [2] 122/19 145/6 photo [2] 23/7 60/4 photograph [23] 21/20 24/2 24/5 24/7 24/11 24/15 27/1 27/5 51/11 54/16 57/1 60/1 61/7 61/12 62/22 63/7 63/8 63/10 64/6 64/7 72/10 82/1 138/21 photographer [2] 109/10 109/15 photographic [1] 68/25 photographs [30] 5/24 18/10 18/16 19/23 20/2 20/5 20/9 20/17 20/20 21/7 21/15 21/15 21/17 21/18 23/17 23/22 23/23 24/25 25/6 96/6 97/3 97/5 97/10 105/21 105/22 105/25 106/3 109/6 135/24 142/14 photos [4] 19/12 21/8 64/10 79/21 phrase [2] 58/10 58/11 physical [4] 44/8 77/1 147/9 147/12 physics [6] 93/1 96/1 116/5 125/6 129/18 131/3 pick [3] 23/25 90/9 134/2 picking [1] 91/6 picks [1] 98/2 picture [9] 20/7 61/18 64/9 66/2 67/10 67/22 138/1 139/10 141/16 pictures [12] 18/19 18/20 18/22 18/25 19/4 19/6 20/16 69/23 72/25 104/19 109/13 141/17 piece [5] 31/1 33/12 70/17 86/9 114/16 pin [1] 100/2 pitcher [1] 11/3 pizza [2] 67/10 72/8 place [5] 24/17 33/14 100/16 130/24 143/12 placed [1] 115/17 </p> | <p> placement [1] 115/7 placing [2] 34/17 35/2 plan [2] 16/15 151/10 planning [3] 5/10 91/3 116/6 plastic [1] 15/17 plat [4] 33/23 35/21 36/4 101/18 platted [5] 36/3 36/6 71/22 102/23 117/20 plattling [4] 37/5 103/11 104/17 120/9 please [6] 7/15 7/16 9/3 22/1 91/18 96/8 pleasure [1] 89/21 plotted [1] 32/18 plug [3] 17/4 121/25 152/11 plugged [1] 93/20 plus [2] 123/3 153/7 podium [2] 11/6 11/7 point [59] 20/16 23/11 25/17 28/5 29/25 33/7 36/10 36/17 36/18 36/20 38/13 38/14 38/18 38/20 41/22 42/5 43/4 43/13 49/17 59/3 69/9 71/23 72/19 72/24 73/4 73/25 78/6 81/7 98/14 100/4 103/1 105/20 113/20 113/24 114/21 117/7 120/24 120/25 121/3 121/4 131/4 132/5 133/22 134/4 134/6 138/15 138/25 143/2 143/3 143/6 143/7 143/10 143/12 148/7 148/12 148/12 148/12 148/13 151/11 pointed [2] 108/8 129/6 pointer [3] 22/17 23/11 73/9 pointing [6] 24/14 60/7 95/23 105/19 117/7 129/12 points [21] 32/18 33/3 33/5 35/21 35/22 36/1 102/25 103/19 103/19 103/21 105/15 110/3 115/2 115/5 116/14 116/16 116/16 116/18 117/20 118/19 134/8 polar [1] 113/19 poles [1] 71/11 police [21] 7/21 12/15 16/17 21/8 27/14 31/23 65/15 78/18 80/9 93/6 107/20 109/21 114/13 126/2 137/7 137/9 138/22 139/2 139/12 139/19 139/24 Politeness [1] 11/13 portion [17] 15/15 34/4 57/2 59/25 61/12 67/5 67/12 74/1 77/9 86/15 86/20 88/18 118/21 119/8 132/24 132/25 143/11 portions [1] 69/13 position [7] 50/2 50/9 62/5 108/4 117/15 141/8 146/11 positioning [1] 27/5 possibility [6] 5/14 15/8 15/11 15/11 15/22 86/6 possible [8] 15/16 16/13 47/23 84/19 84/23 112/9 120/21 140/14 possibly [3] 14/5 59/2 146/22 potential [1] 47/13 potentially [1] 75/11 poured [2] 67/4 69/4 practical [3] 13/16 90/8 101/6 practice [9] 11/18 18/9 71/15 78/2 78/17 116/8 117/21 122/13 150/7 practices [2] 109/7 138/19 precise [2] 8/25 112/8 precisely [1] 41/25 preferred [5] 38/5 38/7 39/19 102/17 </p> | <p> 109/22 prefers [1] 19/12 prejudice [1] 55/9 prepared [6] 8/9 90/22 135/6 144/19 149/12 152/12 presence [10] 3/16 4/7 5/13 57/18 62/25 76/2 99/8 102/6 124/9 124/19 present [10] 3/19 4/10 18/24 47/10 65/15 76/3 85/25 86/2 109/5 144/22 presented [4] 48/10 111/2 127/2 140/25 pressure [1] 150/21 presumably [1] 83/18 pretrial [6] 149/15 150/23 151/3 151/18 152/19 153/13 pretty [3] 63/2 127/10 140/19 prevalent [1] 63/20 prevent [1] 147/8 previous [3] 23/15 111/16 111/23 previously [4] 13/4 72/7 97/1 108/6 principally [1] 61/12 principle [3] 33/19 38/1 61/16 principled [1] 124/7 print [1] 94/12 printed [1] 116/5 printout [2] 19/16 107/24 printouts [3] 19/14 19/14 19/20 prints [2] 94/9 94/10 prior [13] 13/10 23/22 53/14 55/2 64/19 73/7 73/19 74/4 85/10 112/15 113/12 133/20 138/17 prism [5] 33/20 36/18 114/5 114/8 114/9 probably [15] 11/6 11/9 13/17 14/5 14/14 36/2 58/9 74/23 75/21 84/1 84/9 90/20 90/24 139/4 142/9 probative [1] 55/8 problem [7] 3/14 10/1 52/18 69/20 109/13 110/2 110/19 problems [1] 89/14 procedure [1] 148/15 procedures [1] 150/11 proceed [2] 6/10 151/10 proceedings [3] 1/10 89/1 154/3 process [8] 14/7 14/12 15/19 37/6 42/16 52/9 83/5 104/5 produce [4] 17/3 71/24 125/10 139/5 produced [8] 26/25 56/5 57/14 71/21 121/8 121/11 121/17 140/23 producing [2] 92/11 96/24 product [2] 71/21 126/8 profession [1] 55/15 profile [1] 75/22 program [15] 29/16 33/24 43/22 51/6 75/17 88/7 103/1 103/18 103/20 104/24 107/20 108/1 110/3 114/25 127/14 programs [2] 115/3 117/23 progressed [1] 111/13 progresses [2] 95/21 119/15 projection [1] 56/10 proper [7] 48/21 80/24 96/14 109/11 115/22 143/8 150/10 properly [9] 48/20 49/9 52/4 81/1 93/19 103/16 115/4 120/23 148/25 proponent [1] 7/1 proposal [1] 6/25 proposed [1] 3/22 proprietary [1] 107/20 </p> |

| | | |
|---|---|--|
| <p>P</p> <p>prosecute [1] 4/8</p> <p>protocol [5] 36/8 103/2 110/7 120/15 125/11</p> <p>protocols [2] 105/14 150/9</p> <p>provide [2] 54/18 145/12</p> <p>provided [11] 3/23 3/24 16/9 38/6 40/2 55/5 77/17 79/7 79/15 79/17 127/18</p> <p>Public [2] 1/17 3/10</p> <p>published [4] 12/20 46/16 110/6 138/3</p> <p>publishing [2] 40/7 46/16</p> <p>puddle [1] 62/11</p> <p>pull [3] 44/20 44/24 140/5</p> <p>pulling [1] 68/7</p> <p>pulses [1] 26/11</p> <p>pumping [1] 26/14</p> <p>pure [1] 100/4</p> <p>purportedly [1] 97/3</p> <p>purpose [6] 65/4 65/24 106/5 115/19 137/6 137/7</p> <p>purposes [13] 7/22 10/7 11/20 13/12 29/14 58/19 65/21 91/2 93/17 99/5 102/3 128/11 144/24</p> <p>pushing [1] 26/14</p> <p>put [20] 7/2 8/12 8/19 16/22 17/7 35/9 35/10 35/17 35/17 35/18 43/19 46/19 55/21 63/22 73/4 100/2 114/16 130/7 132/11 138/17</p> <p>puts [1] 150/21</p> <p>putting [1] 115/9</p> <p>PWG [2] 1/5 3/3</p> | <p>87/21 88/19 93/3 93/8 101/19 103/23 103/24 104/4 104/6 104/12 105/7 110/4 115/13 115/15 116/6 120/5 131/20 132/5 132/6</p> <p>Raise [1] 7/11</p> <p>raised [1] 68/12</p> <p>range [23] 6/5 44/4 45/2 46/8 46/17 46/19 46/22 122/24 123/2 123/11 123/14 123/14 123/16 123/16 123/17 123/18 123/21 123/25 124/2 124/5 124/11 124/19 124/20</p> <p>ranged [2] 46/1 123/5</p> <p>ranges [1] 46/2</p> <p>RAPHAEL [1] 1/13</p> <p>rapidly [1] 64/21</p> <p>rate [1] 150/5</p> <p>rather [8] 26/18 87/25 90/2 90/2 108/21 110/14 111/3 112/17</p> <p>ratio [4] 100/25 106/15 106/17 108/15</p> <p>rationality [1] 146/5</p> <p>raw [4] 108/1 116/13 117/14 145/5</p> <p>reach [2] 92/15 93/19</p> <p>reached [3] 48/8 50/12 100/19</p> <p>reaching [1] 65/6</p> <p>read [13] 10/2 42/23 48/20 78/6 79/11 85/9 86/24 92/2 92/3 92/3 151/6 152/9 152/10</p> <p>reading [5] 5/16 40/8 86/18 86/23 146/25</p> <p>real [10] 13/12 13/15 14/4 14/14 27/2 94/10 98/22 130/24 133/19 139/22</p> <p>really [4] 52/4 76/9 139/16 144/17</p> <p>rear [25] 27/3 27/15 28/8 28/8 35/22 38/20 42/12 63/21 64/11 64/22 78/25 85/25 86/7 86/8 86/10 100/24 106/14 111/17 116/16 116/22 120/13 121/8 121/16 139/1 143/16</p> <p>rearview [1] 64/21</p> <p>reason [7] 15/22 18/1 86/21 87/6 124/7 124/20 153/16</p> <p>reasonable [2] 127/6 147/11</p> <p>reasonably [3] 55/3 148/10 151/11</p> <p>reasons [3] 41/8 134/25 135/12</p> <p>recall [21] 15/21 20/12 21/1 28/16 33/5 34/18 35/19 37/13 40/19 53/8 62/7 63/18 79/21 85/9 85/25 86/15 86/17 86/20 86/23 86/24 143/4</p> <p>recap [1] 56/19</p> <p>receive [1] 116/1</p> <p>received [1] 144/11</p> <p>recent [1] 10/4</p> <p>recently [1] 68/24</p> <p>recess [3] 53/3 128/18 153/21</p> <p>reckless [1] 147/13</p> <p>recognize [6] 10/17 25/22 29/1 29/22 37/23 122/3</p> <p>recollection [6] 8/25 60/22 60/25 61/1 70/8 81/21</p> <p>recommended [3] 116/8 117/21 122/13</p> <p>reconstruction [26] 4/22 10/23 12/8 12/21 13/16 13/24 14/3 34/9 48/1 48/24 49/1 49/13 53/7 53/14 54/14 65/17 71/15 78/12 81/8 81/9 94/7 95/22 114/12 126/2 129/6 144/16</p> <p>reconstructionist [13] 34/12 34/13 55/16 92/12 93/6 109/9 111/1 122/12 123/22</p> | <p>123/23 123/25 127/4 145/12</p> <p>reconstructionists [1] 148/11</p> <p>reconstructions [2] 53/14 114/14</p> <p>record [10] 6/18 7/16 10/22 90/3 91/18 145/17 147/25 149/13 149/16 154/3</p> <p>recross [3] 2/4 84/9 84/15</p> <p>RECROSS-EXAMINATION [1] 84/15</p> <p>rectangle [1] 108/4</p> <p>red [17] 25/11 27/10 27/16 27/22 28/1 57/4 60/8 108/4 118/16 118/20 119/2 119/4 119/5 119/16 137/14 137/23 146/4</p> <p>redirect [4] 2/4 128/13 142/22 142/24</p> <p>reduce [2] 41/6 124/12</p> <p>reduced [1] 54/20</p> <p>refer [8] 8/6 8/18 94/18 100/14 113/17 117/8 124/17 126/3</p> <p>reference [16] 12/9 25/17 33/7 36/8 36/10 39/12 39/20 44/4 53/21 53/21 66/4 70/4 73/5 113/20 113/24 123/20</p> <p>referenced [2] 95/11 113/21</p> <p>referencing [1] 40/6</p> <p>referred [5] 41/14 53/6 95/3 126/3 126/20</p> <p>referring [8] 60/10 60/14 64/1 68/13 73/18 116/23 118/9 131/5</p> <p>reflect [2] 103/17 104/25</p> <p>reflected [1] 15/19</p> <p>reflecting [1] 23/5</p> <p>reflective [3] 10/19 66/7 114/10</p> <p>reflector [2] 34/5 114/8</p> <p>reflector-less [1] 114/8</p> <p>reflects [2] 33/20 114/5</p> <p>refresh [1] 8/24</p> <p>refute [1] 54/18</p> <p>regard [6] 4/21 38/4 49/19 52/14 86/14 91/5</p> <p>regarding [5] 5/12 5/14 5/15 96/16 147/2</p> <p>regardless [4] 50/15 82/22 82/23 83/1</p> <p>rehabilitate [1] 6/22</p> <p>relate [3] 57/8 79/5 117/9</p> <p>related [1] 51/19</p> <p>relates [1] 9/25</p> <p>relation [1] 84/1</p> <p>relative [4] 23/6 34/16 111/18 125/8</p> <p>relay [1] 85/4</p> <p>relevant [2] 10/8 65/21</p> <p>reliable [17] 6/3 17/3 30/25 53/21 53/21 55/5 65/7 65/19 92/12 92/14 127/20 148/6 148/20 149/7 149/22 150/2 150/7</p> <p>reliably [6] 6/3 92/13 148/6 149/7 149/22 150/2</p> <p>relied [8] 20/21 39/14 54/20 55/4 55/14 65/19 79/21 148/10</p> <p>relies [2] 37/7 65/18</p> <p>rely [6] 21/4 55/16 65/10 65/24 79/23 79/23</p> <p>relying [2] 76/2 114/17</p> <p>remain [1] 131/24</p> <p>remained [4] 52/5 61/19 76/5 86/11</p> <p>remember [5] 11/12 35/4 35/16 55/11 81/21</p> <p>remembered [1] 115/17</p> <p>reminds [1] 110/20</p> <p>remove [1] 132/15</p> |
| <p>Q</p> <p>qualifications [3] 9/23 92/1 92/2</p> <p>qualify [3] 10/5 17/17 106/3</p> <p>quality [4] 19/16 19/17 69/1 76/20</p> <p>quarrel [1] 93/17</p> <p>quarter [1] 66/11</p> <p>quarters [2] 27/17 43/5</p> <p>question [28] 9/6 9/7 9/8 9/10 10/25 11/14 14/24 16/6 23/2 23/15 39/3 51/1 53/4 57/8 67/23 80/12 81/14 86/5 91/25 93/24 96/19 97/16 101/8 104/16 109/3 115/5 120/18 125/23</p> <p>questionable [2] 78/3 147/4</p> <p>questioned [1] 82/25</p> <p>questioner [2] 11/12 11/13</p> <p>questioner's [1] 11/7</p> <p>questioning [1] 72/4</p> <p>questions [15] 6/18 9/3 9/23 9/24 10/8 39/3 49/17 50/20 52/13 52/14 84/8 84/10 84/18 88/21 128/7</p> <p>quick [3] 10/25 128/8 150/24</p> <p>quickly [3] 58/12 147/22 151/4</p> <p>quite [3] 20/13 60/4 71/18</p> <p>Quiznowski [2] 40/7 40/8</p> <p>quote [1] 64/24</p> <p>quoted [1] 106/23</p> | <p>R</p> <p>radii [1] 41/5</p> <p>radio [2] 35/12 35/14</p> <p>radius [35] 31/2 31/11 31/13 32/14 32/23 35/24 38/2 41/4 41/15 41/16 41/17 41/20 42/21 87/3 87/7 87/20</p> | |

| | | |
|--|---|---|
| <p>R</p> <p>render [1] 109/18 rendered [2] 54/24 114/17 reopening [1] 145/3 repaving [1] 68/24 repeat [1] 78/22 reply [1] 152/16 report [54] 4/23 5/3 5/9 6/6 8/3 8/10 8/19 8/20 8/24 10/23 11/8 13/20 15/6 15/20 29/2 29/2 29/22 29/23 38/24 47/2 48/19 52/7 71/17 82/23 85/23 87/10 87/17 92/3 101/2 105/7 105/19 116/19 117/6 120/8 120/12 122/23 123/2 124/2 124/5 127/24 134/25 135/6 135/10 135/12 136/1 136/9 136/12 141/25 144/11 144/13 144/19 144/21 145/7 145/9 reported [4] 98/16 118/17 119/17 122/25 reporter [8] 1/23 7/24 52/19 93/11 129/12 130/12 154/1 154/8 reports [9] 3/24 11/18 46/18 46/19 46/24 65/17 100/23 148/2 148/18 represent [6] 103/22 105/6 108/2 117/23 120/3 134/17 representation [4] 29/24 30/3 30/19 82/20 representative [1] 30/10 representatives [1] 4/4 represented [3] 108/4 108/9 117/16 representing [3] 3/5 119/8 120/1 represents [2] 117/5 118/16 request [2] 91/24 144/10 require [2] 4/4 105/14 required [2] 40/11 54/22 requires [2] 45/9 147/15 research [1] 100/20 resistance [1] 99/22 resolution [2] 112/10 119/2 resource [2] 38/6 40/2 respect [4] 4/21 102/24 121/21 121/25 responders [1] 21/9 rest [10] 62/5 80/19 86/4 89/1 89/19 91/13 131/23 131/24 135/5 135/17 restrain [1] 48/20 restrained [4] 49/9 49/13 51/5 52/5 restraint [1] 48/22 result [9] 15/24 75/2 80/25 92/11 94/16 107/23 107/24 109/16 127/7 resulted [1] 75/14 results [2] 17/3 110/18 resume [1] 10/18 retain [1] 50/5 retard [1] 132/16 Retards [1] 132/13 retrieved [1] 85/17 return [3] 23/15 88/25 109/3 returned [1] 21/14 Returning [1] 42/4 revealed [1] 58/15 reverse [1] 114/18 reversed [1] 41/22 review [8] 21/4 25/6 77/17 97/8 97/10 127/18 150/10 151/8 reviewed [5] 5/3 13/2 20/16 53/12 97/5</p> | <p>rigged [1] 140/2 right [163] right-hand [2] 68/21 83/10 road [39] 20/11 23/19 23/23 25/8 31/9 44/2 44/8 46/12 47/21 58/12 59/3 62/9 66/15 67/17 67/21 68/11 68/17 68/17 69/19 72/5 72/13 73/23 74/1 76/21 82/19 98/12 103/6 103/7 104/20 105/16 105/23 122/7 125/1 131/23 134/18 135/3 135/5 139/25 140/10 roadway [26] 15/15 23/5 23/17 23/18 41/3 44/21 44/25 46/6 46/7 54/11 57/18 57/21 60/6 61/24 62/23 67/12 68/7 68/11 73/1 75/8 76/4 77/8 77/9 77/10 77/11 139/3 rock [2] 47/10 47/12 rocks [2] 68/6 68/14 rod [16] 33/11 34/4 34/17 35/2 105/9 112/22 112/23 112/24 114/5 114/12 114/13 114/15 114/16 114/20 115/7 115/17 rogue [1] 52/2 role [1] 5/24 roll [1] 151/3 rolled [2] 135/17 136/7 rolling [4] 18/2 94/11 99/22 110/22 rollover [3] 50/14 50/16 135/20 roof [1] 135/18 room [5] 38/9 69/8 69/12 83/14 111/10 root [1] 126/7 rotate [3] 98/23 99/23 99/23 rotated [2] 18/5 99/25 rotates [2] 98/21 129/21 rotating [11] 94/15 95/3 95/5 96/22 98/4 100/14 129/16 129/20 130/1 130/15 130/17 rotation [5] 111/13 125/10 129/4 129/18 135/3 rougher [1] 66/24 round [1] 145/3 route [5] 44/21 64/19 74/4 74/6 74/13 RPR [1] 154/8 rub [1] 71/5 rubber [2] 140/12 140/17 rule [13] 3/18 4/3 4/18 5/22 6/24 15/7 15/11 55/1 86/6 90/15 146/5 149/25 150/13 ruling [12] 4/19 6/11 7/5 54/9 65/22 90/20 90/24 149/14 149/15 150/16 151/2 152/13 rulings [1] 3/22 run [1] 68/24 running [5] 49/12 72/4 148/23 153/8 153/11 RYAN [1] 1/17</p> <p>S</p> <p>S-C-R-U-B [1] 94/21 SAE [2] 110/6 110/8 safe [1] 130/10 Safety [1] 34/13 said [31] 8/2 19/4 25/22 30/5 40/11 40/20 42/8 44/14 55/11 64/22 64/25 66/8 70/8 81/25 83/2 83/8 83/19 85/6 99/2 112/15 121/16 123/10 123/18 133/12 137/20 137/22 141/22 150/18</p> | <p>150/19 153/5 153/5 sake [1] 37/12 same [10] 8/22 19/1 27/20 48/4 51/5 68/23 68/25 69/1 80/25 97/16 save [1] 51/17 saves [1] 51/16 saw [11] 5/1 5/23 40/11 42/23 59/19 63/20 64/21 72/23 72/25 79/6 85/22 say [66] 4/3 9/1 9/7 9/13 13/10 14/2 14/12 15/6 20/13 21/7 21/17 22/2 23/16 24/2 24/5 28/16 30/17 33/8 35/21 37/1 39/8 39/11 40/9 40/25 43/4 46/6 46/10 61/10 64/17 65/16 65/18 70/2 70/6 70/19 71/23 73/15 74/9 75/19 80/15 82/1 83/12 86/2 88/13 90/1 90/23 93/24 94/10 96/5 103/10 104/18 106/18 109/15 117/19 121/22 123/24 126/7 132/4 134/6 139/16 139/17 140/23 141/3 149/3 149/23 150/10 153/6 saying [13] 16/10 28/3 36/10 37/4 39/25 73/11 99/3 103/12 111/12 131/3 132/19 133/3 142/13 saying to [1] 36/10 says [8] 11/13 86/15 86/20 86/25 87/4 108/9 125/11 131/25 scale [3] 29/3 100/22 107/25 scaled [8] 101/5 104/3 106/13 108/3 108/4 111/7 111/7 121/6 scanning [1] 144/19 scarring [1] 62/14 scenario [1] 138/10 scene [68] 5/16 5/24 14/4 14/4 15/13 15/14 17/7 17/11 18/16 19/1 21/1 21/5 21/9 21/14 25/15 25/18 28/19 28/20 29/3 30/3 31/19 32/8 33/7 35/5 36/11 39/9 39/10 49/20 50/9 56/21 57/7 60/11 60/17 60/18 62/8 63/20 70/10 70/15 71/12 71/22 72/17 72/20 73/3 73/20 80/17 83/3 83/21 83/25 96/6 97/3 97/8 101/6 101/7 102/16 102/18 102/20 102/23 104/17 109/4 109/9 109/19 109/21 109/23 112/17 118/17 135/24 141/17 146/20 schedules [3] 4/15 152/6 152/14 school [2] 12/7 81/8 schools [1] 10/2 science [2] 122/1 122/3 scientific [2] 52/9 146/7 scooting [1] 64/4 scratches [1] 71/4 screams [1] 146/23 screen [8] 19/13 19/17 22/5 56/6 60/12 81/17 92/10 102/5 scrub [3] 94/18 94/19 94/20 scrubbing [1] 130/18 scuff [20] 25/24 26/22 95/2 95/2 95/7 95/10 95/12 95/14 95/18 95/18 95/20 96/11 103/16 105/5 133/13 133/15 138/23 142/19 142/20 143/15 seat [23] 48/21 49/3 49/4 49/19 49/20 49/25 50/4 50/5 50/10 50/10 50/12 50/13 51/2 52/1 80/24 81/1 89/3 91/11 146/4 146/9 146/13 146/19 147/2 seatbelt [5] 51/16 51/17 51/23 80/7 80/15 seatbelts [4] 50/3 51/20 80/6 146/11</p> |
|--|---|---|

| | | |
|---|--|---|
| S | | |
| seated [3] 7/13 51/13 91/17 | share [1] 7/21 | sign [1] 147/10 |
| second [18] 24/10 38/7 38/9 40/9 40/11 41/9 41/9 85/23 90/23 93/3 93/14 99/13 110/18 111/11 120/19 125/14 134/2 134/16 | she [27] 8/1 51/13 52/1 52/4 64/18 64/18 64/20 64/20 64/22 64/22 64/24 64/25 66/7 66/8 70/2 70/4 70/6 70/8 80/23 83/1 83/2 83/8 85/5 85/6 123/25 153/5 153/5 | significance [2] 98/12 143/6 |
| section [1] 136/1 | she'll [1] 7/12 | significant [2] 43/16 88/4 |
| secured [1] 85/18 | she's [3] 93/11 151/22 151/24 | signs [1] 57/15 |
| see [79] 8/25 15/2 17/23 18/1 18/9 20/19 21/20 22/3 24/11 24/15 25/2 26/20 27/6 27/10 27/10 27/21 29/17 30/9 34/16 35/1 37/6 37/7 37/7 44/22 51/11 59/15 60/3 60/4 61/9 61/13 62/12 62/13 62/16 62/25 63/2 66/9 66/10 66/15 66/17 66/19 66/21 69/22 70/16 71/3 71/6 72/8 76/7 77/21 87/24 90/4 93/9 94/14 97/11 97/17 97/22 99/1 105/7 106/3 108/12 111/8 111/17 112/1 114/24 119/3 129/21 129/23 130/8 130/15 130/23 136/16 138/24 138/25 139/17 141/13 141/17 142/15 142/17 147/4 150/16 | sheet [1] 70/17 | silver [1] 70/22 |
| see the [1] 129/23 | sheets [1] 152/8 | similar [1] 118/6 |
| seeing [5] 19/14 50/9 88/9 104/19 151/21 | shift [1] 89/15 | Similarly [1] 5/8 |
| seems [6] 4/8 4/19 4/22 6/4 6/14 114/18 | shine [1] 22/18 | simple [5] 93/7 94/10 122/21 127/11 127/11 |
| seen [5] 19/3 19/6 56/3 68/17 85/11 | shocked [1] 65/15 | simpler [1] 104/9 |
| selected [1] 20/1 | shoot [1] 36/19 | simply [3] 95/22 110/14 137/7 |
| selection [1] 153/8 | shooting [1] 36/10 | simulate [1] 51/3 |
| senior [1] 46/25 | short [3] 25/14 26/7 86/16 | simulation [1] 49/12 |
| sense [13] 4/10 4/13 7/3 49/6 49/11 49/15 51/15 52/10 80/7 96/9 102/24 128/12 152/1 | short-lived [1] 25/14 | simulations [1] 48/25 |
| sensitive [2] 42/19 87/1 | shortcut [1] 104/6 | simultaneous [2] 152/15 152/17 |
| sensitivity [1] 112/7 | shot [2] 33/20 152/24 | simultaneously [1] 18/2 |
| sentence [2] 136/18 136/23 | should [45] 16/10 17/23 22/11 22/13 38/2 41/1 41/3 41/5 41/20 41/20 43/10 61/10 61/17 65/8 65/11 68/23 77/20 81/1 82/20 86/22 91/3 100/25 101/2 106/4 110/19 112/10 112/10 114/15 114/20 116/9 118/1 118/8 120/20 121/17 123/11 127/22 127/22 127/23 128/14 143/7 143/12 143/20 143/21 145/10 145/10 | since [9] 6/10 8/20 34/12 54/14 94/10 95/8 116/2 116/5 148/5 |
| separate [3] 59/10 138/22 139/12 | shoulder [19] 15/15 47/3 47/6 47/9 55/22 56/1 64/12 64/25 68/8 69/19 72/13 72/16 73/5 73/8 96/21 105/22 130/17 141/22 141/25 | single [2] 134/1 142/15 |
| separates [1] 140/13 | shouldn't [1] 62/24 | sir [47] 7/9 8/18 10/13 13/3 20/24 22/8 24/18 27/12 34/24 38/12 40/8 40/17 40/21 44/6 45/12 45/21 45/23 49/22 52/11 52/25 53/25 56/18 59/9 68/19 69/5 78/1 79/16 81/16 82/9 82/12 82/16 84/5 87/13 88/2 89/20 91/10 91/11 91/20 91/22 93/12 108/18 128/9 130/7 136/21 136/23 144/3 144/5 |
| sequence [3] 104/2 126/21 134/19 | show [22] 19/13 22/13 24/25 25/1 28/25 29/24 30/21 54/17 58/3 61/4 61/25 62/20 65/19 67/22 71/18 71/19 73/9 75/22 99/2 102/5 117/25 137/12 | sit [1] 132/7 |
| sequestration [1] 4/3 | showed [3] 21/20 82/2 109/20 | site [2] 113/15 113/24 |
| sergeant [69] 4/23 5/22 6/15 7/8 7/11 7/19 10/12 10/14 11/24 20/20 24/11 27/9 28/14 40/6 40/25 49/19 50/25 52/14 52/20 53/4 55/14 56/17 58/5 61/25 63/7 64/14 66/2 70/1 73/10 81/5 81/15 84/17 88/22 88/24 89/15 89/18 91/13 98/11 98/19 101/17 102/4 102/21 104/16 104/22 105/2 106/21 109/5 109/20 116/14 117/5 120/8 121/5 121/21 122/17 123/14 124/11 127/19 127/24 133/24 137/15 141/18 143/11 145/1 145/23 148/9 148/17 149/5 149/6 150/17 | showing [11] 18/17 29/8 39/4 41/10 56/23 59/23 63/6 110/12 119/7 119/16 147/9 | sitting [1] 35/16 |
| series [7] 12/20 21/22 23/16 26/11 61/9 61/13 63/12 | shown [4] 29/12 71/16 79/21 100/20 | situ [1] 85/20 |
| service [1] 91/14 | shows [12] 29/16 42/12 46/17 63/10 67/11 92/8 111/17 115/21 118/15 121/7 143/15 143/16 | situation [4] 39/14 125/1 127/1 149/18 |
| serving [1] 33/12 | shut [5] 44/21 139/25 140/8 140/9 140/10 | six [10] 42/19 42/24 63/6 63/19 63/25 64/1 64/6 87/1 90/17 101/25 |
| set [11] 4/17 11/5 33/13 36/17 46/9 75/9 113/20 113/21 113/24 152/18 153/1 | sic [1] 103/24 | six inches [2] 42/19 87/1 |
| setting [1] 36/15 | side [61] 3/25 4/1 23/5 23/17 23/19 25/8 27/2 27/2 27/3 28/6 28/7 28/8 30/10 42/14 47/19 47/20 54/10 56/25 57/4 60/1 60/8 60/24 61/7 62/22 63/9 63/22 63/22 67/17 67/18 67/21 68/9 68/22 69/15 69/16 69/16 69/19 71/7 72/5 73/1 73/18 76/15 77/5 78/25 83/10 96/22 98/23 102/13 104/20 110/16 118/20 118/21 119/4 119/5 119/15 119/16 124/24 124/25 125/16 125/16 135/18 147/21 | Sixteen [1] 118/6 |
| Seven [2] 71/20 81/20 | side-wise [1] 98/23 | sixth [4] 14/5 112/12 153/10 153/11 |
| Seventeen [1] 119/1 | sides [2] 3/23 149/24 | size [1] 69/16 |
| seventh [2] 14/5 151/17 | sidewall [2] 96/23 96/23 | sketch [1] 39/5 |
| several [6] 17/6 44/10 103/18 112/25 135/21 144/13 | sideways [6] 18/7 28/5 60/20 129/2 129/3 146/14 | skid [21] 14/21 44/19 44/23 45/13 45/15 45/19 58/12 59/1 61/16 61/23 92/9 94/5 94/15 94/15 94/23 95/1 95/13 95/13 122/13 122/20 139/5 |
| Shante [2] 22/17 90/1 | Sierra [1] 26/5 | skidding [2] 26/12 61/20 |
| | sight [1] 114/9 | skids [2] 58/7 59/1 |
| | | skill [1] 4/25 |
| | | skills [1] 109/16 |
| | | skip [1] 9/22 |
| | | sky [1] 139/18 |
| | | slam [1] 44/22 |
| | | sled [4] 44/23 44/24 45/14 45/22 |
| | | slice [2] 67/10 72/8 |
| | | slide [6] 15/8 60/19 98/23 126/3 131/17 133/18 |
| | | sliding [6] 41/2 58/8 95/3 95/5 98/4 131/7 |
| | | slight [1] 74/20 |
| | | slightly [2] 60/8 63/9 |
| | | slip [5] 60/19 95/25 108/8 111/8 126/21 |
| | | slipping [1] 18/2 |
| | | slope [2] 27/7 114/3 |
| | | slow [4] 8/1 100/18 132/16 132/19 |
| | | slower [4] 41/9 41/19 42/1 93/9 |
| | | slowing [5] 41/7 41/10 110/15 110/18 131/7 |
| | | slowly [1] 7/24 |

| | | |
|----------|---|--|
| S | 96/10 96/12 97/14 110/6 specifically [7] 13/5 14/17 34/16 35/9 86/24 94/7 111/10 specifics [1] 104/15 specify [1] 77/20 specs [1] 37/15 speculate [1] 9/4 speed [161] speeding [2] 147/12 147/14 speedometer [2] 5/16 146/25 speeds [5] 6/5 6/5 45/18 59/4 96/2 spell [4] 7/16 45/6 91/18 113/9 spelled [1] 7/18 spend [3] 5/10 5/19 93/10 spending [1] 151/23 spin [26] 14/25 15/8 98/23 100/20 101/12 106/18 107/1 107/2 107/6 107/15 108/11 108/21 126/19 126/20 127/12 133/17 133/21 134/10 134/17 136/9 136/11 136/13 136/15 136/19 137/4 137/5 spinning [6] 18/6 26/19 57/19 60/20 61/22 95/11 spins [2] 75/11 77/8 spiral [1] 41/12 split [1] 43/20 spoke [4] 70/1 85/5 85/11 124/18 spoken [2] 144/16 144/18 spouting [1] 148/23 spray [1] 57/6 spread [1] 152/8 spreadsheet [2] 127/14 149/10 spun [1] 28/9 square [1] 126/7 squared [4] 93/2 93/8 126/10 126/14 squares [1] 127/16 stability [1] 18/4 stand [4] 6/16 6/23 8/13 127/9 stand-alone [1] 127/9 standard [21] 37/2 38/1 39/9 46/9 46/13 46/17 46/21 71/15 78/2 78/17 83/5 103/2 110/6 117/17 120/15 123/9 123/19 125/11 131/12 138/18 150/8 standards [4] 68/12 96/12 105/13 110/5 standing [2] 64/24 66/7 standpoint [1] 48/24 stands [1] 141/15 Stannard [1] 116/2 start [12] 4/17 19/14 19/20 23/17 25/16 31/11 66/10 78/12 83/15 92/20 95/13 95/14 started [6] 7/20 47/5 47/17 63/15 73/16 84/4 starting [4] 22/2 72/19 151/11 153/7 starts [3] 38/21 89/15 119/15 state [14] 7/15 26/18 48/19 91/17 92/23 96/13 99/9 99/12 99/15 99/16 100/21 101/10 136/19 140/8 stated [3] 42/18 64/18 134/25 statement [12] 16/18 16/21 54/3 55/23 70/2 82/25 83/24 85/4 85/6 85/7 85/8 85/11 statements [3] 16/7 55/13 56/4 states [12] 1/1 1/4 1/11 3/2 89/7 93/1 106/17 111/10 131/22 134/25 138/11 151/22 | station [31] 13/21 14/2 14/7 14/13 30/15 32/10 32/22 33/6 33/9 33/10 33/12 34/9 35/21 36/7 36/13 71/11 80/1 102/8 110/3 112/18 112/22 112/25 113/2 114/2 114/19 114/21 114/22 116/7 116/13 116/20 117/14 Stations [1] 113/18 stay [5] 89/1 90/1 90/2 90/16 130/9 steady [10] 92/23 96/13 99/9 99/11 99/14 99/15 99/16 100/21 101/10 136/19 steel [1] 113/16 steer [2] 125/6 133/4 steering [1] 131/16 STENOTYPE [1] 1/24 step [6] 6/13 88/22 98/25 98/25 103/5 144/3 steps [5] 17/8 48/25 49/1 99/10 106/12 sticky [1] 46/3 still [15] 12/12 18/6 59/20 60/20 61/22 64/24 86/3 99/17 115/25 127/6 131/7 131/9 131/9 132/19 140/2 stone [1] 72/7 stones [1] 98/3 stood [1] 121/12 stop [3] 26/11 101/21 126/3 stopping [1] 46/4 stops [3] 69/18 82/18 132/11 straight [18] 18/6 27/15 29/8 30/19 56/20 63/14 70/17 74/16 74/21 75/3 76/9 76/9 99/22 100/2 118/18 130/20 131/25 132/4 Street [2] 85/18 85/21 strengthens [1] 48/4 striation [17] 22/1 22/4 23/13 24/5 26/19 26/23 57/18 61/10 62/25 63/11 63/18 64/2 64/12 76/2 76/3 110/24 141/17 striations [32] 17/24 18/1 21/19 21/21 23/12 23/24 24/19 25/1 25/5 25/7 25/22 57/23 57/25 58/16 58/19 59/16 59/19 59/21 60/25 61/16 63/2 94/23 94/24 95/5 96/20 96/21 96/25 97/24 110/21 130/19 130/23 131/13 strike [1] 63/11 strikes [1] 61/9 stripe [1] 28/1 stripes [1] 27/11 strongest [2] 76/13 76/18 struck [1] 135/21 studies [1] 46/15 study [7] 42/23 79/6 79/7 79/10 112/13 112/14 138/10 stuff [1] 68/25 stumps [1] 51/7 submission [2] 152/15 152/17 submitted [1] 133/23 subsequently [4] 19/3 19/6 135/17 136/7 substances [1] 5/13 substantially [2] 55/8 117/20 substantive [1] 145/13 substitution [1] 126/16 subtract [1] 104/7 such [7] 3/13 36/23 47/12 48/25 54/16 94/12 124/19 sufficiency [1] 54/23 |
|----------|---|--|

| | | |
|---|---|--|
| <p>S</p> <p>sufficient [5] 6/3 17/4 77/23 112/5 150/2</p> <p>suggest [5] 4/12 31/18 32/22 105/10 120/20</p> <p>suggested [3] 50/9 141/3 150/22</p> <p>suggestion [2] 6/10 152/14</p> <p>Suite [2] 1/14 1/18</p> <p>sum [2] 127/15 133/1</p> <p>summary [1] 127/17</p> <p>sunny [2] 139/15 139/16</p> <p>superimposed [2] 24/16 30/5</p> <p>Supplemental [1] 10/22</p> <p>support [11] 4/6 54/23 55/18 55/24 65/23 99/2 110/24 145/13 145/22 146/12 147/25</p> <p>supported [2] 36/18 123/21</p> <p>supports [1] 109/17</p> <p>suppose [4] 15/9 85/2 88/16 151/18</p> <p>sure [33] 3/20 8/6 8/14 8/21 9/13 11/2 22/6 29/19 40/12 40/22 48/14 50/21 50/22 52/18 56/8 58/13 59/5 59/15 66/1 70/5 83/17 86/24 90/12 96/10 98/25 99/20 101/24 109/15 109/17 110/15 124/22 151/14 153/15</p> <p>surface [30] 23/19 25/8 44/24 47/21 58/18 66/16 66/23 66/24 67/17 68/3 68/4 68/6 68/21 68/21 69/2 76/21 98/3 98/12 105/17 114/10 123/3 124/10 124/12 124/16 124/19 124/23 125/1 125/12 130/8 130/10</p> <p>surfaces [2] 46/1 125/21</p> <p>surveying [2] 13/23 113/1</p> <p>surveyor [1] 113/13</p> <p>surveyors [1] 113/21</p> <p>survivability [1] 51/15</p> <p>survivable [1] 51/22</p> <p>survival [2] 49/8 52/6</p> <p>suspend [1] 3/17</p> <p>suspension [1] 75/9</p> <p>sustain [1] 50/17</p> <p>swear [1] 7/12</p> <p>switch [1] 35/14</p> <p>SWORN [2] 7/14 91/16</p> <p>system [8] 5/15 14/2 26/7 26/8 26/10 45/17 48/22 71/22</p> | <p>114/6 130/24</p> <p>taking [7] 18/9 37/23 45/16 45/18 109/13 111/25 143/7</p> <p>talk [9] 5/22 10/5 17/8 30/24 52/22 67/15 101/24 128/10 136/9</p> <p>talked [6] 32/10 44/1 68/4 85/10 102/12 123/16</p> <p>talker [1] 8/1</p> <p>talking [11] 8/22 8/22 10/1 10/6 11/10 11/24 28/18 68/5 86/14 92/5 92/9</p> <p>talks [1] 39/5</p> <p>tangent [1] 132/5</p> <p>tape [2] 113/16 140/5</p> <p>taught [6] 46/24 81/7 99/11 104/6 123/7 139/8</p> <p>teach [3] 138/15 138/19 139/6</p> <p>teaches [2] 43/9 112/9</p> <p>teachings [1] 127/8</p> <p>technical [3] 109/16 146/7 150/7</p> <p>technician [2] 18/23 109/9</p> <p>technique [2] 12/4 139/8</p> <p>techniques [3] 53/7 111/6 139/7</p> <p>technology [8] 12/16 22/11 23/1 45/9 102/8 116/3 122/15 122/19</p> <p>techs [2] 101/2 106/18</p> <p>tedious [2] 104/5 127/13</p> <p>telephone [1] 144/13</p> <p>teleprompter [1] 22/10</p> <p>tell [22] 4/12 7/25 9/18 12/3 35/7 41/25 45/24 48/18 51/14 51/18 60/22 61/5 70/15 70/19 84/12 90/9 97/23 106/9 110/22 115/23 120/9 124/2</p> <p>telling [2] 83/1 102/3</p> <p>temperature [1] 140/15</p> <p>templar [1] 30/6</p> <p>ten [5] 20/14 46/12 52/16 149/9 152/7</p> <p>tendency [1] 11/8</p> <p>tens [1] 142/9</p> <p>tenth [1] 84/1</p> <p>tenths [1] 84/2</p> <p>term [10] 11/25 88/9 88/15 88/18 92/21 92/21 95/9 113/2 126/17 136/11</p> <p>terminology [3] 94/6 121/23 148/23</p> <p>terms [14] 6/10 19/3 26/24 37/4 42/16 43/5 65/5 88/14 109/19 112/21 116/8 120/2 147/19 151/10</p> <p>terrain [1] 63/13</p> <p>terrific [2] 9/16 89/3</p> <p>test [5] 45/14 45/15 48/8 49/1 147/19</p> <p>tested [1] 150/4</p> <p>testified [12] 7/20 13/4 106/7 108/6 108/14 117/12 129/5 137/11 141/24 144/20 145/7 146/17</p> <p>testifies [1] 55/2</p> <p>testify [19] 4/25 6/24 16/16 54/19 54/25 82/24 84/12 114/16 141/18 145/24 146/1 146/5 147/5 147/9 147/17 150/18 150/18 150/19 150/20</p> <p>testifying [3] 146/24 146/25 146/25</p> <p>testimony [44] 3/22 4/2 4/21 5/12 5/13 6/15 6/19 27/25 52/21 52/23 53/11 54/2 54/7 56/19 65/7 65/9 81/21 88/3 90/3 90/13 90/20 90/22 96/16 97/14 98/10 108/21 108/25 109/5 112/12 115/16 124/6 125/23 128/9 137/14 143/25 144/22 145/8 145/19 148/4 148/4</p> | <p>148/16 149/4 150/15 152/22</p> <p>testing [5] 44/8 100/19 122/13 123/3 150/8</p> <p>testings [1] 122/20</p> <p>tests [1] 44/19</p> <p>text [5] 53/18 86/14 110/12 111/9 138/13</p> <p>textbooks [1] 116/2</p> <p>texture [1] 68/20</p> <p>than [42] 8/21 19/17 20/21 26/15 26/18 36/1 41/10 41/17 42/19 42/24 46/6 47/21 47/24 48/3 52/16 55/22 63/10 66/24 68/22 75/3 77/4 87/1 87/25 90/1 90/21 101/1 101/3 104/12 106/17 108/16 108/22 110/14 111/3 112/5 112/17 123/8 133/2 141/7 141/10 147/15 150/17 151/24</p> <p>thank [37] 3/7 3/15 4/11 8/7 8/16 9/21 10/9 10/21 11/17 11/22 23/14 24/21 34/23 40/23 43/24 52/12 53/25 56/12 71/9 84/13 88/21 88/23 89/18 89/20 91/8 91/17 91/22 92/17 128/15 130/13 132/9 143/24 144/3 145/15 153/3 153/5 153/19</p> <p>thanks [3] 88/24 91/13 91/13</p> <p>that [957]</p> <p>that's [123] 3/21 5/2 6/8 6/9 6/25 8/2 9/18 13/23 13/23 16/20 18/12 19/13 21/20 21/23 21/23 22/13 22/16 24/5 24/20 25/14 25/25 26/10 26/13 28/3 28/7 29/14 30/15 32/6 33/18 37/20 38/20 39/9 41/8 43/3 43/22 44/16 46/25 48/16 49/7 51/16 51/23 53/25 55/18 56/1 56/14 58/23 59/9 60/11 63/3 64/7 64/8 65/8 65/9 65/24 66/7 68/3 71/16 72/7 72/22 73/15 74/5 75/22 78/5 78/14 78/19 81/8 83/22 87/4 88/5 88/7 90/17 91/2 92/8 92/15 94/3 94/12 98/7 100/3 100/17 100/22 101/25 102/1 103/1 103/22 105/18 105/20 107/13 108/3 108/8 108/17 109/2 110/19 114/25 116/4 117/1 121/8 121/24 121/25 125/9 126/6 130/24 138/1 138/21 139/4 139/19 139/22 142/16 143/14 145/9 145/25 146/21 147/1 147/6 147/10 147/19 148/21 149/16 149/24 150/12 150/12 150/15 151/4 151/10</p> <p>the at [1] 82/17</p> <p>the real [1] 130/24</p> <p>their [12] 3/23 4/1 4/6 4/7 4/15 6/13 49/8 51/20 104/18 148/2 148/5 152/22</p> <p>them [34] 4/10 4/15 6/24 7/2 16/11 16/13 16/15 20/13 24/20 25/7 26/21 27/4 36/4 40/17 55/6 72/18 76/22 76/24 77/1 77/2 95/4 97/15 103/1 108/5 109/17 115/4 118/6 118/11 122/19 126/7 132/12 132/13 148/12 149/3</p> <p>themselves [1] 55/4</p> <p>then [126] 6/22 7/12 9/11 9/11 14/5 14/8 24/8 27/13 27/20 29/21 32/3 32/11 32/13 32/13 33/10 33/23 34/4 34/12 44/21 45/18 45/18 45/19 46/17 46/24 51/20 54/15 54/17 54/22 55/17 57/24 61/13 63/11 63/14 67/4 67/13 68/11 69/3 74/5 74/6 74/10 74/12 76/8 82/14 82/18 84/11 85/10 85/23 86/17 87/22</p> |
| <p>T</p> <p>T-H-E-O-D-L-I-T-E [1] 113/10</p> <p>T-O-M-A-S-I-E-L-L-O [1] 34/21</p> <p>tab [2] 87/11 87/12</p> <p>table [3] 3/11 54/8 123/10</p> <p>take [48] 5/17 6/13 6/23 10/14 11/2 18/19 18/20 20/2 21/14 27/14 29/13 29/19 30/20 32/10 38/2 47/15 48/8 48/24 52/16 52/20 53/1 56/3 59/20 65/16 77/1 80/11 82/15 88/24 90/20 96/12 96/15 99/10 101/16 103/5 106/11 106/12 107/4 109/23 110/14 111/15 124/16 126/20 127/23 128/8 128/16 140/3 140/4 141/16</p> <p>taken [22] 19/23 20/5 20/9 20/10 20/21 21/1 21/8 21/12 23/7 25/8 56/20 57/1 61/7 72/10 97/3 97/8 98/11 109/6 110/13 135/24 143/12 143/22</p> <p>takes [7] 41/4 44/24 52/2 90/4 100/16</p> | | |

| | | |
|--|--|--|
| <p>T</p> <p>then... [77] 88/17 88/17 88/17 90/4 90/5 90/14 90/15 91/6 93/3 93/5 93/14 95/14 100/8 100/19 101/12 103/3 103/24 104/4 104/24 105/4 105/23 106/11 106/12 107/6 108/1 108/3 108/12 110/11 110/19 111/11 112/22 113/15 113/20 114/2 114/3 114/7 115/1 118/3 118/20 118/24 119/4 119/9 119/10 119/15 119/19 120/5 120/6 122/3 122/23 124/17 125/7 125/12 125/21 126/16 126/22 127/15 128/10 130/11 132/3 132/4 132/21 132/23 134/2 135/16 136/25 137/17 140/5 141/19 141/20 142/2 142/4 142/22 151/6 151/23 152/4 152/17 152/23</p> <p>theodolite [4] 113/1 113/3 113/8 113/11</p> <p>theory [3] 41/19 68/23 69/1</p> <p>there [152] 5/13 5/14 7/13 9/2 10/7 11/13 16/2 16/6 17/3 17/6 17/19 20/4 20/17 20/20 21/1 21/18 22/9 22/13 23/10 24/4 24/25 27/14 27/15 31/20 33/14 33/15 36/12 39/11 39/20 39/24 40/15 40/15 40/18 43/16 44/10 46/9 46/15 46/16 46/19 47/8 47/10 47/24 47/24 49/3 49/25 50/2 50/5 50/9 50/11 50/13 51/1 51/24 53/7 54/7 54/8 54/8 54/11 54/19 55/12 55/12 55/12 55/20 55/21 55/23 57/4 58/10 58/20 58/21 59/10 60/12 62/2 62/10 63/4 63/24 65/12 68/8 69/8 69/12 69/20 69/24 70/6 70/13 70/17 71/2 72/4 72/9 74/6 74/8 74/9 74/15 74/21 76/17 77/3 80/14 82/10 84/4 85/19 86/7 86/9 88/4 88/20 92/7 95/7 96/9 96/12 96/19 99/10 101/5 101/17 101/21 103/8 110/5 112/12 115/3 118/8 121/12 123/20 124/18 124/23 125/15 125/23 128/13 130/12 132/13 134/9 136/13 137/17 137/21 138/10 139/9 139/10 139/12 139/22 140/12 140/25 140/25 142/13 143/1 143/1 145/12 146/9 146/9 146/12 146/12 146/16 147/10 149/18 150/4 150/4 150/8 150/9 153/18</p> <p>there'll [1] 5/15</p> <p>there's [58] 10/14 11/3 19/13 20/14 20/14 20/14 21/24 27/6 33/9 33/11 33/14 33/19 38/4 40/10 43/14 45/8 46/15 47/19 48/15 50/5 50/14 51/20 59/1 60/8 66/10 70/8 72/19 74/6 74/11 74/12 75/7 75/9 76/19 82/12 82/14 82/14 87/8 96/22 98/22 110/6 112/13 112/21 112/22 114/7 119/3 122/25 125/5 129/18 130/3 132/22 133/19 133/19 136/12 142/11 146/9 147/16 149/19 149/21</p> <p>therefore [11] 18/6 41/4 102/22 106/25 108/24 117/22 121/9 122/2 124/14 136/18 136/25</p> <p>these [47] 16/15 19/9 19/14 20/4 20/18 21/7 21/15 21/17 21/18 25/6 26/21 26/24 29/13 32/7 36/3 46/10 56/21 63/22 64/10 74/3 74/17 75/16 97/2 98/11 98/17 100/10 100/12 101/15 102/5 102/12 104/19 106/21 113/14</p> | <p>114/24 114/25 115/19 120/2 120/6 120/9 122/2 130/23 137/11 139/2 140/21 140/24 141/17 146/18</p> <p>they [69] 3/25 6/13 11/14 16/9 16/10 16/11 16/15 18/13 18/14 21/12 28/15 29/10 29/11 30/12 30/13 30/18 31/24 33/22 36/4 44/18 48/3 49/9 49/24 50/15 50/17 51/20 51/22 53/12 55/4 55/17 57/8 59/1 61/17 65/16 68/24 74/19 90/1 93/20 99/2 101/16 101/16 102/6 102/7 102/15 102/16 104/23 105/3 105/4 105/18 109/11 109/15 113/3 113/15 113/16 113/17 113/21 114/18 115/19 117/9 120/3 122/2 124/25 139/24 140/19 149/2 149/3 149/3 149/24 150/9</p> <p>they're [8] 24/16 29/8 29/11 46/10 72/23 104/19 133/13 141/9</p> <p>they've [2] 46/25 116/5</p> <p>thing [11] 22/10 31/5 31/11 52/19 65/10 69/3 146/22 147/4 149/16 150/22 153/6</p> <p>things [7] 5/19 25/15 36/24 84/19 102/10 125/20 141/13</p> <p>think [41] 5/6 5/7 5/17 6/8 9/22 18/14 30/17 30/20 36/1 38/16 40/1 41/14 42/5 44/18 49/6 51/8 51/25 52/3 53/23 54/6 65/8 65/10 75/21 86/3 90/24 91/2 91/3 96/9 101/8 104/14 116/3 118/8 118/9 122/6 123/4 123/5 128/12 134/3 151/11 152/13 152/20</p> <p>thinking [2] 14/1 93/10</p> <p>third [6] 59/25 74/5 74/9 74/12 82/12 122/5</p> <p>this [248]</p> <p>thorough [1] 144/18</p> <p>those [53] 4/9 4/22 13/2 16/7 17/23 18/25 19/12 19/22 21/24 23/17 25/8 25/22 25/23 26/1 26/19 28/23 30/9 30/10 32/14 42/12 53/12 53/16 55/13 58/16 59/11 60/13 60/16 68/2 72/13 72/16 72/17 77/12 95/15 96/24 97/5 97/10 97/23 97/24 98/4 99/1 103/19 103/21 104/15 105/17 105/22 105/25 106/3 112/9 115/2 116/18 122/12 130/18 150/7</p> <p>though [2] 67/8 129/2</p> <p>thought [10] 22/9 39/11 58/6 81/25 102/10 125/20 138/16 138/16 141/22 141/24</p> <p>thousands [1] 142/9</p> <p>three [25] 12/6 27/17 28/25 33/3 35/21 36/1 43/19 46/12 53/2 61/5 63/23 64/3 64/4 64/7 78/13 79/8 100/12 104/12 106/22 112/14 116/16 138/8 138/22 139/12 139/25</p> <p>three feet [1] 104/12</p> <p>three-quarters [1] 27/17</p> <p>threw [1] 152/21</p> <p>through [42] 6/13 7/2 10/2 12/5 12/6 19/10 19/22 20/8 21/22 21/24 23/9 23/16 23/16 23/22 40/10 46/24 50/5 51/8 56/22 61/14 62/15 62/16 71/24 72/25 75/23 76/10 78/13 94/11 95/21 97/1 97/2 103/21 104/4 105/23 110/2 113/15 118/4 118/4 118/5 119/25 125/9 148/23</p> <p>throughout [4] 101/4 104/2 126/21</p> | <p>134/19</p> <p>throw [2] 103/10 149/23</p> <p>thrown [1] 49/7</p> <p>tight [1] 69/21</p> <p>time [50] 5/7 5/10 5/17 5/19 6/22 11/2 11/10 13/7 13/10 13/17 14/5 14/11 16/14 18/24 19/1 23/18 26/12 29/19 33/21 33/21 34/10 36/14 53/6 53/6 78/4 86/1 89/24 93/10 99/6 102/2 104/5 109/6 119/13 125/6 125/11 125/21 127/15 139/19 140/7 141/1 141/2 144/14 151/1 151/8 151/12 151/14 151/20 151/20 151/23 152/16</p> <p>times [19] 7/21 13/10 13/18 14/1 14/6 14/12 70/24 88/10 88/14 93/4 109/10 126/8 126/8 126/9 126/10 126/10 126/14 126/14 141/16</p> <p>timing [1] 52/22</p> <p>tiny [1] 98/3</p> <p>tire [160]</p> <p>tires [31] 18/6 31/2 57/14 59/6 60/20 61/23 71/6 71/6 76/7 76/23 76/25 77/4 77/4 78/20 78/23 78/25 99/22 100/17 104/2 106/14 108/5 112/1 129/24 130/1 130/15 130/17 132/3 132/12 132/14 132/18 132/20</p> <p>to-date [1] 123/1</p> <p>today [20] 4/19 5/7 5/11 6/9 6/21 6/24 11/24 35/16 53/20 74/15 89/24 90/3 90/13 122/18 124/6 128/10 144/20 145/8 145/17 145/19</p> <p>today's [1] 7/22</p> <p>together [3] 35/20 73/4 115/5</p> <p>told [4] 39/12 39/22 46/9 125/15</p> <p>tolerance [2] 43/5 43/11</p> <p>Tomacello [1] 34/8</p> <p>Tomasiello [8] 34/6 34/7 34/10 34/16 34/20 35/20 72/22 104/17</p> <p>tonight [1] 89/16</p> <p>too [9] 86/15 87/1 94/14 103/22 114/11 121/25 123/18 131/15 131/16</p> <p>took [14] 5/23 5/24 17/8 18/16 18/22 18/24 19/7 38/17 77/12 77/15 98/19 102/11 104/22 106/21</p> <p>top [14] 29/5 30/6 33/15 60/3 60/12 61/12 63/22 64/2 64/5 68/18 73/21 119/5 119/22 141/9</p> <p>Total [30] 13/21 14/2 14/7 14/13 30/15 32/9 32/22 33/6 33/9 33/12 34/9 35/21 36/7 36/13 71/11 80/1 102/8 110/2 112/18 112/25 113/2 113/18 114/1 114/19 114/21 114/22 116/7 116/13 116/20 117/13</p> <p>totality [1] 30/20</p> <p>totally [1] 127/21</p> <p>touch [3] 22/5 22/12 128/11</p> <p>toward [1] 129/12</p> <p>towards [5] 27/13 61/14 72/19 80/18 82/7</p> <p>towed [1] 85/17</p> <p>Tower [1] 40/6</p> <p>track [11] 36/24 37/4 37/11 37/19 37/24 38/21 101/3 104/3 106/19 106/19 108/16</p> <p>tracked [1] 72/24</p> <p>tracking [5] 42/13 75/4 106/14 106/22</p> |
|--|--|--|

| | | |
|---|---|---|
| <p>T</p> <p>tracking... [1] 143/16</p> <p>traction [1] 58/11</p> <p>trade [1] 44/16</p> <p>traffic [7] 12/21 23/6 34/13 67/21 139/9 142/11 142/12</p> <p>train [1] 139/4</p> <p>trained [2] 29/25 46/24</p> <p>training [23] 4/24 5/3 5/4 12/5 13/12 13/17 14/6 14/14 34/8 39/13 39/21 40/15 40/19 53/13 53/20 106/13 109/10 109/11 115/22 115/22 116/1 122/1 139/7</p> <p>transcript [13] 1/10 90/25 90/25 145/19 147/22 147/23 148/4 150/24 151/5 151/12 152/3 152/9 154/3</p> <p>TRANSCRIPTION [1] 1/24</p> <p>transfer [4] 70/25 71/2 86/10 140/17</p> <p>transferred [1] 36/20</p> <p>transits [1] 113/13</p> <p>translating [2] 129/17 129/20</p> <p>translation [2] 129/19 129/19</p> <p>travel [18] 15/15 23/7 27/21 38/3 57/20 63/4 64/20 65/1 66/3 66/7 69/15 69/18 74/3 74/11 82/14 131/25 132/5 141/8</p> <p>traveled [3] 41/24 96/2 134/18</p> <p>traveling [10] 30/18 64/18 64/22 68/10 69/14 95/23 99/21 108/7 129/7 136/4</p> <p>travels [1] 44/22</p> <p>tread [4] 76/25 77/4 77/10 96/18</p> <p>treatise [1] 53/19</p> <p>treatises [1] 12/9</p> <p>tree [4] 62/13 62/14 135/18 146/14</p> <p>trees [5] 51/7 62/18 63/16 75/24 135/21</p> <p>trial [13] 4/17 6/11 7/1 16/16 54/21 55/3 130/21 144/24 145/2 150/14 151/15 152/20 153/7</p> <p>triangular [1] 74/7</p> <p>tried [1] 144/15</p> <p>trimmed [1] 5/18</p> <p>tripod [4] 33/13 34/1 36/18 112/22</p> <p>trooper [2] 115/24 140/9</p> <p>trouble [1] 19/13</p> <p>troubling [1] 114/13</p> <p>truck [2] 66/10 66/11</p> <p>true [12] 36/15 36/19 42/11 65/13 103/17 103/23 103/23 103/24 110/4 113/23 115/12 117/23</p> <p>truth [3] 65/6 65/11 83/1</p> <p>try [12] 9/11 9/17 25/15 26/11 41/9 63/22 64/25 83/14 83/15 83/22 138/13 145/12</p> <p>trying [12] 25/17 29/14 54/12 69/6 83/13 87/7 101/9 103/20 114/11 138/15 138/19 139/6</p> <p>Tuesday [2] 1/7 144/11</p> <p>tunnel [1] 63/15</p> <p>tunnel-looking [1] 63/15</p> <p>turn [14] 29/21 37/22 38/23 38/24 42/6 87/16 107/3 107/17 109/3 118/3 131/15 132/2 132/24 133/17</p> <p>turned [2] 22/14 146/13</p> <p>turning [1] 18/7</p> <p>turns [1] 124/23</p> <p>Twenty [2] 116/25 151/17</p> | <p>Twenty-seventh [1] 151/17</p> <p>twist [1] 140/5</p> <p>two [82] 6/20 12/6 21/23 25/7 29/3 34/11 35/22 36/1 37/23 37/24 38/2 38/5 39/6 39/15 39/18 39/23 39/24 40/16 40/20 41/4 41/5 42/19 43/2 43/4 43/4 43/13 43/19 43/20 56/1 58/4 59/24 59/25 60/9 60/13 62/20 63/20 63/24 64/10 66/6 67/5 69/13 71/17 72/16 74/10 74/11 78/13 79/4 82/13 84/2 84/19 86/16 88/4 88/5 93/5 94/8 95/24 97/14 97/20 103/2 105/6 106/20 106/24 110/12 110/12 110/14 110/14 111/3 112/1 112/5 115/14 116/16 117/9 118/18 124/15 125/20 125/20 126/11 126/15 129/18 133/1 153/7 153/12</p> <p>two inches [3] 43/2 43/4 79/4</p> <p>two-scale [1] 29/3</p> <p>two-tenths [1] 84/2</p> <p>two-third [1] 59/25</p> <p>type [13] 13/23 21/5 47/21 51/2 51/2 55/3 59/8 65/10 67/14 95/2 114/6 123/19 140/21</p> <p>types [5] 95/7 96/8 125/1 129/18 140/24</p> <p>typically [6] 15/24 57/22 76/13 76/15 94/16 95/3</p> <p>U</p> <p>U.S [1] 78/18</p> <p>ultimate [2] 145/23 148/19</p> <p>ultimately [2] 98/23 135/17</p> <p>unable [1] 15/18</p> <p>unbalanced [4] 125/7 125/8 125/12 125/20</p> <p>under [8] 3/23 6/16 10/3 18/8 55/1 125/4 146/5 149/25</p> <p>understand [19] 25/19 33/9 39/25 48/14 49/18 58/22 59/15 65/4 66/3 67/23 70/5 71/9 82/24 84/6 93/15 98/25 122/1 122/3 145/6</p> <p>understanding [12] 22/11 26/16 39/17 59/9 66/1 76/12 78/4 78/19 92/21 93/16 99/5 121/22</p> <p>understood [8] 39/8 50/22 53/11 58/6 58/14 72/21 74/14 153/15</p> <p>undertaken [1] 86/6</p> <p>unfortunately [7] 32/7 62/24 89/25 94/14 121/24 127/10 150/21</p> <p>uniform [3] 28/15 92/25 116/4</p> <p>unit [4] 33/9 34/1 34/13 36/16</p> <p>UNITED [6] 1/1 1/4 1/11 3/2 89/7 151/22</p> <p>United States [2] 3/2 151/22</p> <p>universal [1] 107/22</p> <p>University [1] 12/16</p> <p>unknown [3] 103/24 103/25 135/12</p> <p>unknowns [1] 115/14</p> <p>unless [6] 11/19 55/7 84/25 109/8 131/24 132/13</p> <p>unlikely [1] 4/23</p> <p>unpack [1] 98/24</p> <p>unremarkable [1] 146/22</p> <p>unrestrained [2] 49/8 50/14</p> <p>unsure [1] 106/12</p> <p>until [7] 32/25 52/23 67/13 76/6 90/17 131/25 134/1</p> <p>unusual [1] 90/17</p> | <p>up [72] 4/16 5/4 7/9 7/23 8/12 8/21 11/5 12/8 22/13 23/25 25/4 26/17 33/13 36/15 36/17 36/21 36/25 37/1 37/1 39/2 40/3 43/22 45/18 45/24 46/10 46/14 50/19 51/24 60/3 61/15 61/23 62/17 62/18 62/19 64/8 64/8 64/20 67/12 68/7 68/10 68/12 72/3 75/5 75/9 76/8 83/18 88/6 89/6 90/10 91/6 91/11 95/9 97/15 98/2 102/1 102/5 103/10 113/20 113/21 113/24 118/8 119/4 119/14 122/12 124/6 126/22 134/2 140/2 140/13 144/7 149/23 153/12</p> <p>upon [33] 20/22 50/8 54/20 55/1 55/4 55/14 55/16 65/10 65/18 65/19 65/24 76/2 85/17 96/1 105/18 114/10 114/17 115/1 116/4 122/1 131/24 131/25 133/24 138/24 140/14 141/8 145/5 145/18 145/24 146/6 147/11 148/10 151/4</p> <p>upright [1] 50/2</p> <p>upside [1] 146/14</p> <p>urgent [1] 138/17</p> <p>us [14] 1/14 4/15 6/22 9/18 21/25 22/1 22/18 69/20 89/24 90/4 93/15 127/23 144/18 147/22</p> <p>usage [1] 37/11</p> <p>use [57] 9/25 10/4 12/4 12/9 13/5 14/7 14/17 14/20 14/21 14/25 23/10 36/7 36/10 36/18 37/2 39/5 45/11 47/22 48/3 56/7 58/10 59/1 59/7 59/16 63/7 65/8 73/9 74/11 78/18 84/25 93/6 93/7 102/17 103/3 103/11 107/7 112/18 113/12 114/8 120/6 122/4 122/12 122/16 123/7 123/10 123/15 125/13 125/18 125/22 128/4 136/13 136/25 137/4 138/8 139/25 148/11 150/24</p> <p>used [42] 12/12 13/10 13/24 29/24 32/9 33/3 35/20 37/18 42/24 44/4 46/25 48/17 57/6 77/21 77/22 77/25 78/20 78/23 87/20 88/17 93/17 101/18 102/8 102/8 105/2 105/15 106/2 106/4 115/20 116/15 120/13 123/15 126/17 130/21 136/11 136/16 143/20 143/21 143/21 148/3 149/1 149/6</p> <p>uses [3] 107/20 114/19 134/4</p> <p>using [24] 13/20 24/13 31/15 32/22 35/10 36/13 36/17 37/8 37/9 44/12 44/14 45/16 59/5 67/24 71/11 92/6 92/13 93/13 93/25 116/7 120/5 123/12 127/7 127/20</p> <p>usual [1] 3/18</p> <p>usually [4] 19/17 36/16 45/2 46/19</p> <p>utilize [1] 53/23</p> <p>utilized [5] 37/11 37/20 77/16 79/8 81/7</p> <p>V</p> <p>V-E-R-I-C-O-M [1] 45/7</p> <p>validate [1] 49/1</p> <p>value [4] 44/5 46/7 55/8 124/14</p> <p>values [4] 122/12 122/24 123/10 126/16</p> <p>variable [1] 28/15</p> <p>variables [5] 17/6 87/8 92/10 93/20 122/9</p> <p>various [1] 80/14</p> <p>varying [1] 36/4</p> <p>veers [1] 82/14</p> |
|---|---|---|

| | | |
|--|--|---|
| <p>V</p> <p>vehicle [154] 15/8 15/12 15/12 15/23 15/24 16/2 18/4 18/7 18/17 20/5 20/10 26/10 27/5 28/5 28/7 28/22 29/5 29/7 29/25 30/6 37/2 37/3 37/5 37/7 37/8 37/8 37/12 37/16 40/25 41/2 41/6 41/10 41/12 41/24 42/1 42/11 42/12 44/20 44/22 45/17 46/4 47/3 47/5 47/20 47/25 48/9 49/7 50/1 51/4 51/7 51/8 51/9 52/5 54/10 57/19 57/22 60/19 60/19 62/6 62/8 62/10 62/13 63/15 64/21 64/22 64/23 64/25 66/22 69/16 70/3 70/7 70/14 70/16 70/20 70/21 70/22 70/24 71/3 71/5 71/8 71/8 75/9 75/10 75/22 75/22 80/19 80/20 80/23 81/2 81/11 84/20 85/15 86/1 86/3 86/7 86/12 92/23 92/24 94/1 95/21 96/13 96/22 97/4 98/3 98/14 98/21 99/11 99/21 99/23 99/25 100/13 100/18 104/8 106/9 106/18 106/19 106/25 107/14 108/3 108/10 108/16 108/21 109/1 110/15 110/17 110/18 111/12 118/19 120/3 120/4 121/7 121/18 121/18 124/25 124/25 125/5 125/12 125/17 126/19 127/1 127/20 129/16 129/20 129/21 130/20 131/14 132/15 132/21 133/4 134/13 134/22 136/10 136/18 137/5</p> <p>vehicle's [3] 31/12 32/19 83/9</p> <p>vehicles [2] 69/19 142/9</p> <p>vehicular [1] 147/15</p> <p>velocity [4] 93/2 93/8 126/10 126/14</p> <p>Vericom [5] 44/12 44/16 45/5 45/8 122/17</p> <p>Vericom Accelerometer [1] 44/12</p> <p>verify [2] 10/17 127/6</p> <p>verifying [2] 111/4 125/17</p> <p>versus [4] 3/2 61/19 123/8 143/3</p> <p>vertical [5] 100/11 100/14 113/14 114/2 129/17</p> <p>very [23] 3/7 5/18 8/16 31/1 58/12 62/12 67/9 70/18 72/23 88/8 89/18 90/17 94/6 95/20 110/23 114/23 127/11 127/13 140/22 142/23 144/20 153/19 153/19</p> <p>vests [1] 66/7</p> <p>VF [1] 126/16</p> <p>vibrating [1] 26/13</p> <p>vicinity [2] 36/2 73/14</p> <p>video [6] 21/1 21/5 21/5 97/8 97/10 142/13</p> <p>view [3] 23/5 65/20 109/22</p> <p>vines [1] 62/12</p> <p>virtually [1] 146/14</p> <p>virtue [1] 67/3</p> <p>visible [2] 30/4 60/23</p> <p>visual [1] 74/19</p> <p>vitae [2] 10/18 10/20</p> <p>vocabulary [1] 36/9</p> <p>voice [4] 7/23 35/12 35/13 56/10</p> | <p>want [57] 4/13 4/17 6/12 6/18 8/6 8/21 9/1 9/8 15/22 17/8 19/18 32/23 33/17 36/15 40/22 46/3 54/5 56/20 62/20 65/25 66/14 70/23 71/19 72/3 82/24 84/12 84/18 90/25 98/24 109/14 109/16 112/8 113/25 118/11 122/5 123/24 128/9 128/9 130/8 130/9 130/14 132/4 144/8 145/17 145/21 147/19 147/21 147/22 147/23 148/1 148/12 148/14 149/2 149/24 151/5 152/11 152/15</p> <p>wanted [3] 50/21 56/6 84/6</p> <p>was [256]</p> <p>Washington [10] 57/3 60/2 61/8 62/23 63/9 64/19 136/5 141/5 142/6 142/8</p> <p>wasn't [11] 49/3 49/11 65/12 65/13 70/17 83/25 86/11 115/16 134/16 142/13 143/21</p> <p>waste [1] 5/7</p> <p>water [1] 11/3</p> <p>way [35] 6/14 6/17 19/17 22/3 27/4 28/2 28/9 28/10 29/11 31/18 35/15 36/12 36/20 44/19 51/3 62/18 65/13 71/16 72/25 75/10 83/14 88/16 90/24 91/12 103/18 108/25 123/10 123/18 125/17 130/25 131/1 131/17 139/22 140/14 150/13</p> <p>ways [2] 41/23 44/10</p> <p>we [167]</p> <p>we'll [16] 7/12 16/22 19/19 25/15 35/14 36/17 36/19 63/7 75/12 90/12 96/10 104/14 128/10 152/3 152/17 153/1</p> <p>we're [25] 3/3 8/22 8/22 10/6 11/24 22/25 23/19 25/17 30/17 31/15 36/15 52/20 56/24 61/5 74/16 84/11 91/24 92/3 92/5 92/9 104/19 131/5 144/7 144/23 150/19</p> <p>we've [12] 20/17 23/9 32/10 42/16 42/18 51/21 102/12 112/18 112/21 119/24 122/6 144/16</p> <p>wear [1] 141/10</p> <p>wearing [3] 51/16 51/20 51/23</p> <p>week [8] 144/14 151/25 152/7 152/24 152/24 152/24 153/7 153/16</p> <p>weekends [1] 151/24</p> <p>weeks [2] 153/8 153/12</p> <p>weight [7] 5/6 55/7 75/10 121/9 140/3 145/10 149/20</p> <p>weight-wise [1] 75/10</p> <p>WEISMAN [7] 1/13 2/13 3/5 54/3 128/11 130/11 137/20</p> <p>well [42] 8/19 15/15 16/22 19/3 20/8 20/15 21/2 25/4 25/5 33/2 35/25 37/1 38/4 41/15 45/15 48/21 49/6 52/19 54/25 59/4 60/3 61/9 61/11 65/12 89/6 96/5 98/14 98/17 100/4 111/13 112/4 121/16 124/12 125/5 129/15 133/24 134/9 137/13 140/10 141/2 141/3 144/23</p> <p>Wendell [6] 2/11 3/17 90/5 91/16 91/19 91/21</p> <p>went [15] 23/15 37/14 42/1 51/8 60/5 63/16 64/25 71/17 78/13 85/23 97/1 135/13 136/5 142/2 142/4</p> <p>were [84] 4/20 5/9 5/14 6/5 6/5 15/17 16/2 16/11 18/24 19/23 20/5 20/9 20/20 21/8 21/9 21/12 23/22 24/13 24/14</p> | <p>34/15 35/9 35/12 37/8 37/9 39/14 39/21 40/14 40/15 46/14 49/9 49/23 49/24 50/2 50/2 50/3 51/20 53/7 54/12 54/20 55/14 56/20 59/15 60/20 62/2 67/18 67/19 68/24 69/23 71/10 74/16 74/17 76/3 77/3 79/21 80/6 81/22 82/1 82/23 86/14 87/5 90/17 93/20 97/1 97/2 100/1 101/15 104/17 107/23 109/6 115/20 116/14 116/18 129/23 133/22 134/9 137/14 137/15 139/19 140/8 146/11 148/2 148/3 150/9 152/21</p> <p>weren't [3] 51/22 53/12 102/21</p> <p>wet [1] 46/6</p> <p>Whaley [1] 3/12</p> <p>what [228]</p> <p>what's [15] 3/25 4/18 25/24 27/4 34/19 40/3 44/12 44/23 69/24 84/24 89/21 92/5 109/12 141/2 144/21</p> <p>whatever [15] 6/18 8/25 10/8 11/2 19/17 46/13 55/13 66/16 70/23 88/25 92/9 102/5 139/7 145/8 145/18</p> <p>wheel [18] 26/25 27/3 27/13 27/25 28/1 28/7 36/24 38/15 38/21 57/19 60/5 63/3 66/10 66/12 76/15 76/15 100/25 108/5</p> <p>wheelbase [4] 104/3 104/7 106/15 106/19</p> <p>wheels [7] 26/17 54/10 61/22 67/18 67/19 67/22 95/12</p> <p>when [104] 11/1 11/13 20/22 24/13 25/15 25/17 27/6 32/13 33/8 33/14 36/3 36/7 36/15 36/20 36/22 37/1 37/6 37/6 37/7 39/4 39/14 43/4 47/6 57/15 58/14 62/7 65/17 66/9 67/15 67/15 67/19 68/24 70/19 71/5 71/6 71/10 75/2 76/21 78/12 78/20 80/6 80/11 81/22 82/18 82/25 83/10 85/15 86/3 92/23 93/3 94/11 94/17 96/2 98/2 99/16 99/21 100/13 100/16 102/8 102/24 103/7 104/25 105/9 108/15 111/21 112/14 113/21 114/24 114/24 120/9 122/4 123/1 124/16 125/5 126/11 126/14 126/19 128/10 128/23 129/3 129/19 131/18 132/11 132/18 133/3 133/6 136/5 137/4 138/3 138/13 139/22 140/1 140/8 140/22 141/14 144/24 145/20 149/11 149/21 151/11 151/15 152/1 152/15 152/18</p> <p>where [110] 4/7 6/8 6/11 6/15 12/3 14/18 18/4 22/3 23/11 24/15 24/21 25/21 27/21 27/25 28/3 33/2 33/15 34/16 34/18 35/5 35/7 35/9 35/10 38/8 38/15 38/17 38/17 38/20 39/8 39/15 39/23 46/21 51/13 51/19 51/21 52/22 54/11 55/19 56/1 58/11 61/15 61/23 62/24 63/15 66/6 67/17 67/22 68/10 69/20 69/23 72/8 72/22 72/23 72/25 73/1 73/11 73/15 73/15 80/16 80/18 80/20 81/22 83/10 83/21 83/22 83/25 83/25 84/1 84/2 84/3 86/15 90/4 93/4 96/23 98/17 98/18 100/12 102/11 102/12 105/16 105/19 106/1 106/21 108/7 113/3 113/13 113/16 113/20 113/22 113/24 114/8 119/14 120/19 121/2 121/4 122/14 122/15 123/8 126/10 126/20 130/9 136/9 138/11 141/16 143/21 146/11 146/13 148/14 149/18</p> |
| <p>W</p> <p>W-E-N-D-E-L-L [1] 91/23</p> <p>waiting [1] 22/25</p> <p>walk [1] 51/19</p> <p>walked [3] 15/14 50/6 62/7</p> <p>wall [3] 67/7 69/14 72/7</p> | | |

| | | |
|---|---|---|
| <p>W</p> <p>where... [1] 152/12</p> <p>whereas [1] 46/5</p> <p>wherever [2] 83/19 87/24</p> <p>whether [38] 5/4 16/11 18/13 24/5 50/15 54/9 58/19 60/22 61/18 65/7 65/22 70/3 70/25 74/15 75/8 75/9 76/17 80/15 82/22 82/23 83/1 86/9 92/8 96/19 106/9 115/9 115/17 125/15 128/13 137/10 145/9 145/23 146/3 147/5 147/7 147/18 148/25 150/1</p> <p>which [92] 10/22 12/7 21/25 24/25 25/1 25/7 26/25 27/7 29/15 29/16 35/24 36/12 38/23 38/24 39/4 42/6 44/11 44/12 44/17 55/1 55/16 57/18 58/7 60/21 60/24 61/21 62/19 63/6 63/18 63/25 65/24 66/24 67/6 67/7 68/12 74/7 75/12 76/8 76/12 78/20 78/23 79/8 81/20 86/20 87/10 87/19 87/21 90/24 92/25 93/1 95/11 101/4 101/16 102/23 103/1 104/11 104/22 105/2 105/13 105/15 105/25 107/20 107/21 108/14 109/20 110/4 110/5 110/20 110/22 111/20 114/7 114/10 115/13 115/19 116/23 118/1 119/18 121/13 122/1 122/6 122/17 125/10 126/13 126/24 131/22 136/20 141/12 141/12 143/7 145/22 147/15 153/15</p> <p>which what [1] 108/14</p> <p>whichever [1] 6/20</p> <p>while [11] 4/19 21/8 22/25 39/2 40/14 57/19 72/11 97/1 99/14 129/17 144/16</p> <p>white [13] 24/15 24/19 27/11 66/17 66/19 66/21 66/25 68/22 69/13 97/24 98/2 118/8 118/10</p> <p>who [15] 4/5 4/6 7/11 18/22 34/4 50/11 54/19 55/11 55/14 114/14 146/17 149/24 150/7 151/21 153/14</p> <p>whole [6] 7/2 30/20 35/25 43/7 43/8 146/3</p> <p>whose [1] 54/19</p> <p>why [25] 8/5 9/18 13/14 15/22 18/1 41/8 51/16 53/1 65/19 74/17 87/6 96/5 109/25 110/5 110/5 110/13 112/3 120/14 122/7 123/24 124/7 125/10 148/19 149/5 153/16</p> <p>wide [2] 67/5 95/20</p> <p>width [15] 28/15 28/15 28/17 36/24 37/4 37/11 37/20 101/3 104/4 106/19 106/20 108/16 123/11 123/14 123/15</p> <p>widths [1] 36/4</p> <p>wife [2] 90/9 128/14</p> <p>will [38] 3/17 3/17 6/12 6/21 7/2 11/17 30/20 33/15 50/5 54/19 56/9 56/12 56/21 69/20 76/21 90/20 92/25 93/13 96/7 96/19 98/23 101/2 106/18 109/18 110/4 110/17 110/21 122/20 126/2 126/7 128/25 131/23 131/25 132/19 133/20 140/15 150/12 151/20</p> <p>wind [1] 140/20</p> <p>winter [1] 26/12</p> <p>wise [2] 75/10 98/23</p> <p>wish [1] 52/13</p> <p>within [9] 88/9 95/5 110/21 121/6 123/16 126/17 131/13 141/8 149/7</p> | <p>without [5] 59/20 59/21 100/8 109/11 127/13</p> <p>witness [24] 3/16 7/14 8/11 11/6 15/13 16/17 19/11 23/1 54/19 54/25 55/16 55/23 56/3 64/17 66/3 70/1 70/2 82/25 83/19 84/12 85/3 91/15 91/16 144/6</p> <p>witness' [1] 54/2</p> <p>witnesses [10] 2/2 3/18 16/7 16/15 49/24 54/14 54/18 64/14 148/17 152/22</p> <p>won't [4] 5/12 5/13 84/20 84/21</p> <p>wood [2] 62/18 63/17</p> <p>wooded [1] 135/14</p> <p>woods [7] 27/7 50/6 61/14 62/3 65/2 74/8 85/17</p> <p>word [4] 74/11 132/16 134/4 136/13</p> <p>words [10] 14/20 17/19 24/4 47/20 73/25 74/24 83/12 111/1 123/22 127/6</p> <p>work [10] 19/2 48/11 65/17 67/3 89/12 111/2 117/23 123/23 128/25 151/24</p> <p>worked [2] 87/21 151/24</p> <p>working [3] 22/16 22/19 56/6</p> <p>works [2] 103/18 139/22</p> <p>world [9] 11/6 13/12 13/15 14/4 14/14 81/9 104/1 130/24 139/22</p> <p>would [174]</p> <p>wouldn't [5] 14/20 14/24 16/3 74/11 140/23</p> <p>wrap [1] 144/7</p> <p>wreckage [1] 147/10</p> <p>write [3] 8/1 137/4 138/13</p> <p>writing [3] 54/20 77/23 79/6</p> <p>written [11] 16/6 16/18 83/24 85/5 85/6 85/8 85/11 127/8 144/21 145/8 145/18</p> <p>wrote [9] 102/21 123/1 135/11 135/12 135/16 135/20 136/4 136/7 136/25</p> <p>X</p> <p>Xinis [1] 153/7</p> <p>Y</p> <p>yardstick [1] 10/5</p> <p>yaw [162]</p> <p>yawing [1] 60/19</p> <p>yaws [2] 41/1 133/17</p> <p>yeah [13] 3/19 3/19 3/19 35/25 54/4 55/11 58/22 67/25 67/25 67/25 75/16 89/14 92/2</p> <p>year [3] 37/16 78/8 141/11</p> <p>years [5] 78/15 78/17 80/10 101/25 115/24</p> <p>yellow [2] 27/18 141/14</p> <p>yes [210]</p> <p>yet [2] 16/16 92/24</p> <p>yielded [1] 106/16</p> <p>you [815]</p> <p>you'd [1] 32/3</p> <p>you'll [4] 8/5 26/12 66/10 71/3</p> <p>you're [55] 7/8 9/1 9/4 9/8 9/9 11/10 23/4 28/3 28/18 32/22 36/10 40/11 43/9 46/4 50/13 50/13 51/15 52/2 57/15 60/9 60/14 69/7 70/25 73/11 87/6 87/7 95/15 96/2 99/3 102/3 102/16 103/2 103/12 106/12 111/2 114/9 115/12 115/15 116/23 123/10 125/7 125/15 129/23 131/7 131/16 131/22 132/5 132/19 132/24 133/3 133/3 135/10 138/15</p> | <p>139/8 142/8</p> <p>you've [23] 7/20 8/17 10/2 13/2 25/6 38/23 56/3 68/17 68/20 71/17 88/6 96/15 99/1 106/7 106/23 117/17 138/14 142/14 145/1 146/10 146/10 146/13 146/14</p> <p>young [1] 115/23</p> <p>your [199]</p> <p>Your Honor [14] 3/4 7/7 16/12 22/25 49/16 54/1 56/12 81/14 84/9 90/8 91/9 142/21 144/10 153/6</p> <p>yourself [1] 21/4</p> <p>yourselves [1] 153/17</p> <p>Z</p> <p>zero [1] 113/20</p> <p>zoom [1] 119/12</p> <p>zoomed [2] 30/17 59/24</p> |
|---|---|---|